

BHALOTIA CLASSES

(9883034569/9330960172)

Fundamental of Environment: 1st Sem 2023-24 (NEW)

S. No.	Chapters	Page Number
1.	Syllabus & Content	01 – 05
2.	Unit 1: Introduction to environmental studies	06 – 10
3.	<u>Unit 2: Ecology and Ecosystems (Focus)</u>	11 – 21
4.	<u>Unit 3: Natural Resources (Focus)</u>	22 – 30
5.	Unit 4: Biodiversity and Conservation	31 – 40
6.	<u>Unit 5: Environmental Pollution (Focus)</u>	41 – 57
7.	<u>Important Short Qns of 2 marks Each (Focus)</u>	58 – 68
8.	<u>Important Long Qns of 5 marks Each (Focus)</u>	69 – 73
9.	<u>Important points for MCQs of 1 marks Each (Focus)</u>	74 – 77
11.	<u>Mock Test Paper [Set A]</u>	78 – 79
12.	<u>Extra MCQs</u>	80 – 82
13.	Environment studies for last time revision: [May leave]	83 – 89
14.	Previous' paper from 2013 to 2022 [May leave]	90–105

QUESTION PATTERN:

10 MCQ Questions of 1 Marks Each: 10 Marks

10 short Questions of 2 Marks Each (out of 12): 20 Marks

4 Questions of 5 Marks Each (out of 6): 20 Marks

**Crash course fees: Per Subject: ₹ 750; All Subjects: ₹ 2,500.
Almost Daily Classes till last Day of Exam.**

BOOK PRICE: ₹ 150

ADMISSION GOING ON FOR B.com Crash course:

PER SUBJECT: ₹ 750
ALL SUBJECTS: ₹ 2500

SYLLABUS OF OLD BATCH HAS BEEN
COMPLETED. NOW RESTART CLASSES FROM
THE VERY BEGINNING. CONTACT 9883034569

DAILY CLASSES TILL EXAMS:

FOR SUGGESTIONS/MOCK TEST/ALL UPDATES:

Join telegram: https://t.me/CU_bcom_1sem

Join telegram: <https://t.me/bhalotia>

Follow the BHALOTIA CLASSES channel on WhatsApp:
<https://whatsapp.com/channel/0029VaHYV0MF1YIM1es6u>

U19

For All updates & Exam time free Marathon Subscribe:
<https://www.youtube.com/@Bhalotiaclasses>

Contact office 9883034569/9330960172 for Details. (10 am to 7 pm)

Whats'app to me at 8820696761 for any Query. (Ravi Bhalotia)

Syllabus [ENVS01] [50 marks]

Unit 1: Introduction to environmental studies [BHALOTIA]

- Multidisciplinary nature of environmental studies;
- Scope and importance;
- Concept of sustainability and sustainable development and sustainability goals
- *Low carbon lifestyle: Mission LIFE*

Unit 2: Ecology and Ecosystems [BHALOTIA]

- Concept of ecology and ecosystem and ecosystem services
- Structure and function of ecosystem
- Energy flow in an ecosystem
- Food chain and food web (Terrestrial and aquatic ecosystems)
- Basic concept of population and community ecology
- ecological succession.

Unit 3: Natural Resources [BHALOTIA]

- Concept of Renewable and Non-renewable resources
- Land resources and land use change; Land degradation, soil erosion and desertification.
- Forest resources: importance.
- Deforestation: Causes, consequences and remedial measures
- Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).
- Energy resources: Environmental impacts of energy generation, use of alternative and nonconventional energy sources, green energy.
- Natural resource accounting

Unit 4: Biodiversity and Conservation [BHALOTIA]

- Levels of biological diversity: genetic, species and ecosystem diversity;
- Biogeographic zones of India; Biodiversity hot spots, Endemism, India as a mega-biodiversity nation
- Threats to biodiversity: IUCN threat categories
- In-situ and Ex-situ conservation of biodiversity, Protected area network
- Role of indigenous communities in biodiversity conservation; Peoples Biodiversity Register, Bioprospecting and Biopiracy

Unit 5: Environmental Pollution [BHALOTIA]

- Environmental pollution: concepts and types,
- Air, water, soil, noise and marine pollution- causes, effects and controls
- Concept of hazards waste and human health risks
- Solid waste management: Control measures of Municipal, biomedical and e-waste.
- Climate change, global warming, ozone layer depletion, acid rain and their impacts on human communities and agriculture

Unit 1:

Introduction to environmental studies

1. **Define Environmental Studies? [2 Marks] [95%]*** [BHALOTIA]**
2. What are the elements of Environmental studies? [BHALOTIA]
3. **Why Environmental studies is called Multidisciplinary nature?**
4. What is Scope of environmental studies? [BHALOTIA]
5. Discuss the objective of environmental studies. [BHALOTIA]
6. Discuss the importance of environmental studies. [2 Marks]
7. What do you mean by sustainability in environmental studies.
8. **What do you mean by Sustainable development in environmental studies? [2 Marks] [98%]**
9. What are Sustainability goals? (SDGs) [BHALOTIA]
10. There are How many sustainable goals? [1 Mark] [80%]****
11. **Write a short notes on Low carbon lifestyle (5 Marks)**
12. **Write a short notes on Mission LiFE (Lifestyle for Environment)**

Unit 2:

Ecology and Ecosystems

1. **What is Ecology? [Very imp] [1 Mark MCQ] [Important] **[90%]**
2. **What is Ecosystem? [Very imp] [1 Mark MCQ]*** [99%]**
3. What are the types of ecosystem services? [BHALOTIA]
4. What are the two main components of Ecosystem. [2 Marks]
5. **What are Biotic and Abiotic Factors? [70%] [2 Marks] [60%]*****
6. **Producers (Autotrophic components) [Imp for MCQ] [70%] [1M]**
7. **Consumers (Heterotrophic components) [Very Imp for MCQ]**
8. **Decomposers or reducers and transformers: [BHALOTIA]**
9. Types of Ecosystem [BHALOTIA] [9883034569]
10. Aquatic Ecosystem [BHALOTIA] [9883034569]
11. **Freshwater Ecosystem [Very Imp for MCQ] [90%] [1 Mark]****
12. Marine Ecosystem: [BHALOTIA] [9883034569]
13. Terrestrial ecosystem [BHALOTIA] [9883034569]
14. What are the Functions of Ecosystem? [30%] [2 Marks]
15. Functional Units of Ecosystem [BHALOTIA] [9883034569]

16. **Energy flow in an ecosystem: [Very Imp for MCQ] [90%] [1M]**
17. **What is Food chain? [90%] [2 Marks] [Very Important]*******
18. Components of food chain
19. Example of food chain
20. **What is Food web? [60%] [2 Marks] [Important]*****
21. Basic concept of population and community ecology: [Very imp] [1 Mark] ***** [BHALOTIA]
22. **Ecological succession [2 Marks] [60%] [Important]****
23. Ecological pyramid (RKB) [BHALOTIA] [9330960172]
24. Vocabulary**** [BHALOTIA] [9330960172/9883034569]

Unit 3: Natural Resources

1. **What do you mean Renewable and Non-renewable resources. [2 Marks] [90%] [VVI]**
2. Land resources [BHALOTIA] [9883034569]
3. Land use change [BHALOTIA] [9883034569]
4. **What is Land degradation? [2 Marks] [80%] [Imp]**
5. **Soil erosion [BHALOTIA] [9883034569]**
6. **Soil conservation [BHALOTIA] [9883034569]**
7. **What is Desertification? [2 Marks] [40%] [Imp]****
8. **What is Deforestation? [2 Marks] [40%] [Imp]****
9. Water: Use and over-exploitation of surface and ground water [BHALOTIA] [9883034569]
10. Floods [BHALOTIA] [9883034569]
11. Droughts [BHALOTIA] [9883034569]
12. Conflicts over water (international & Inter-state)
13. **Environmental impacts of energy generation**
14. **Alternative and non-conventional energy sources [VVI for MCQ] [1 Marks]**** ****
15. **What is Green energy? (2 Marks) (Very imp)*** (90%)**
16. What's the difference between green energy and renewable energy? [BHALOTIA] [9883034569]
17. Types of Green energy. [Imp for MCQ] [1 Mark] [40%]
18. Natural resource accounting (NRA) [BHALOTIA]

Unit 4: Biodiversity and Conservation

1. **What is Biodiversity? [2 Marks] [very imp] [98%]******
2. Types of Biodiversity [BHALOTIA] [9883034569]
3. Biogeographic zones of India [1 Mark MCQ] [90%]****
4. Biodiversity patterns
5. Global biodiversity hot spots [1 Mark MCQ] [90%]****
6. **Biodiversity hot spots of India [1 Mark MCQ] [90%]******
7. India as a mega-biodiversity nation
8. **Endangered species of India [1 Mark MCQ] [90%]******
9. Endemic species of India
10. Extinct species
11. Threats to biodiversity
12. Conservation of biodiversity
13. Objectives of Biodiversity Conservation
14. Types of Conservation [1 Mark MCQ] [99%]****
15. **In-situ Conservation [1 Mark MCQ] [99%]******
16. Biosphere Reserves
17. National Parks:
18. Wildlife Sanctuaries:
19. Biodiversity Hotspots
20. Gene Sanctuary
21. Sacred Groves
22. **Ex-situ conservation [1 Mark MCQ] [99%]******
23. Botanical gardens
24. zoo
25. Gene bank:
26. Seed gene bank:
27. Protected area network
28. Indigenous communities
29. Peoples Biodiversity Register
30. What is Bioprospecting? [2 marks] [30%]
31. What is Biopiracy? [2 marks] [30%]
32. Distinguish between bioprospecting and biopiracy?

Unit 5: Environmental Pollution

1. Environmental pollution: concepts and types
2. Atmosphere [Important for MCQ] [1 Mark] [30%]
3. **What is Air Pollution? What are its causes & effect? [5 Marks] [90%] [VVI]**
4. Discuss the Effects of Air Pollution. [5 Marks]
5. Discuss the measures to Control Air Pollution.
6. **Types of air pollutants (Important for MCQ) [1 Mark]**
7. Pollutants: Fly ash [For MCQ]
8. Pollutants: Lead [For MCQ]
9. Major Gaseous Air Pollutants: Carbon monoxide (CO)
10. Major Gaseous Air Pollutants: Carbon dioxide (CO₂) [For MCQ]
11. Chlorofluorocarbons (CFCs) [For MCQ]
12. Ozone (O₃) [For MCQ]
13. Sulphur dioxide (SO₂) [For MCQ]
14. National Air Quality Index (AQI) [For MCQ]
15. **What is Water pollution? What are causes & effects. [5 Marks] [60%] [Important]*****
16. What is Soil Pollution? What are its causes & effects. [5 Marks] [30%]
17. **What is Noise pollution? [Important for MCQ]**
18. What is Marine pollution- What are its causes?
19. What is hazardous waste? [2 Marks] [30%]
20. **What is Solid waste management? [2 Marks] [30%]**
21. Types & Source of Solid Wastes
22. Methods of Solid Wastes Disposal:
23. Control measures of Municipal, biomedical and e-waste:
24. What do you mean by Biomedical waste? [2 Marks] [30%]
25. What are the Control measures of e-waste? [2 Marks] [30%]
26. **What is Climate change? [2 Marks] [very imp] [80%]**
27. **What is Global warming? [2 Marks] [very imp] [80%]**
28. **What is Global warming? What are the Causes of Global Warming? [5 Marks] [Very Imp]**
29. **Discuss the Effects of Global Warming. [5 M] [30%]**
30. **What is the Ozone Layer? [1 Mark MCQ] [30%]******
31. **What is Ozone layer depletion? [2 Marks] [30%]******
32. **What are the causes of Ozone Layer Depletion? [5 Marks] [30%]**
33. **Discuss the Effects of Ozone Layer Depletion?**
34. **What is Acid rain? [2 Marks] [80 %]*****
35. **Discuss the impact of Acid Rain?**
36. **What is Green House effect? [1 Mark MCQ] [95%]**

Unit 1:

Introduction to environmental studies

1. Define Environmental Studies? [2 Marks] [95%]* [BHALOTIA]**

Definition of Environmental Studies:

The word environment is derived from the French word “environ” meaning surroundings.

Environment literally means Surrounding in which we are living.

Environmental Protection Act (1986) defined “Environment as the sum total of water, air and land, their interrelationship among themselves and with the human beings, other living beings and property.”

Environmental studies is a multidisciplinary academic field which systematically studies human interaction with the environment.

2. What are the elements of Environmental studies? [BHALOTIA]

The environment is constituted by the interacting systems of physical, biological and cultural elements inter-related in various ways, individually as well as collectively. These elements are

Physical Elements

Space, landforms, water bodies, climate, soils, rocks and minerals. They determine the variable character of the human habitat, its opportunities as well as limitations

Biological Elements

Plants, animals, microorganisms and human beings constitute the biosphere.

Cultural Elements

Economic, social and political elements are essentially manmade features, which constitute the cultural milieu.

3. Why Environmental studies is called Multidisciplinary nature? [2 Marks] [very imp]** [90%] [BHALOTIA] [9883034569]**

The study of environmental components is multidisciplinary in nature, since it includes all disciplines. (important)*****

Environmental studies is multi-disciplinary because it comprises various branches of studies like chemistry, physics, medical science, life science, agriculture and public health. It is the science of physical phenomena in the environment. Environmental studies deals with every issue that affects an organism. It is an applied science as it seeks practical answers to making human civilization sustainable on the earth's finite resources.

4. What is Scope of environmental studies? [BHALOTIA]

Environmental studies has multiple and multi-level scopes:

- (a) Conservation of ecosystem and biodiversity
- (b) Prevention and control of pollution
- (c) Management of natural resources
- (d) Impacts of human population on the environment.

5. Discuss the objective of environmental studies. [BHALOTIA]

1. To clarify modern environmental concept like how to conserve biodiversity.
2. To know the more sustainable way of living.
3. To use natural resources more efficiently.
4. To know the behaviour of organism under natural conditions.
5. To know the interrelationship between organisms in populations and communities.
6. To aware and educate people regarding environmental issues and problems at local, national and international levels.

6. Discuss the importance of environmental studies. [2 Marks] [80%] [Very Important]*** [BHALOTIA] [9883034569]**

The importance of environmental studies is described as follows:

- (a) Clarification of modern environmental concept like how to conserve biodiversity.
- (b) Helping people know the more sustainable way of living.
- (c) Making masses understand how to use natural resources more efficiently.
- (d) Developing awareness about the behaviour of organism under natural conditions.
- (e) Creating knowledge about the inter-relationship between organisms in populations and communities.
- (f) Creating awareness and educating people regarding environmental issues and problems at local, national and international levels.

7. What do you mean by sustainability in environmental studies. [2 Marks] [96%] [Very Important]*** [BHALOTIA]**

Sustainability is derived from the Latin word *sustinere* i.e., to hold and sustain. Sustain is to maintain. It is related to the quality of life in a community – whether the economic, social and environmental systems that make up the community are providing a healthy, productive, meaningful life for all community residents, present and future.

Sustainability can be defined as the practice of maintaining processes of productivity (natural or human made) indefinitely by replacing resources used with resources of equal or greater value without degrading or endangering natural biotic systems.

8. What do you mean by Sustainable development in environmental studies? [2 Marks] [98%] [Very Important]*****

What is sustainable development ?

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.". (important)*****

The concept of sustainable development has two related concepts, i.e., the right to develop and the need to sustain the environment, which need to be balanced for achieving future development in a sustainable manner. It is the practice of developing land and construction projects in a manner that reduces their impact on the environment by creating energy efficient models. This can take the form of installing solar panels or wind generators on factory sites, using geothermal heating techniques or even participating in cap and trade agreements.

The modern concept of sustainable development is derived mostly from the 1987 Brundtland Report.

In June 1992 the **United Nations Conference on Environment and Development (UNCED)** further refined the term by developing an agenda for nations to follow that would move the world toward sustainable development. Agenda 21, as it was called, was a three-hundred-page plan for achieving sustainable development in the twenty-first century. (important)*****

9. What are Sustainability goals? (SDGs) [BHALOTIA]

On 1 January 2016, the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development — adopted by world leaders in September 2015 at an UN summit.

The United Nations created 17 world development goals called the Sustainable Development Goals (SDGs).

The short titles of the 17 SDGs are: No poverty (SDG 1), Zero hunger (SDG 2), Good health and well-being (SDG 3), Quality education (SDG 4), Gender equality (SDG 5), Clean water and sanitation (SDG 6), Affordable and clean energy (SDG 7), Decent work and economic growth (SDG 8), Industry, innovation and infrastructure (SDG 9), Reduced inequalities (SDG 10), Sustainable cities and communities (SDG 11), Responsible consumption and production (SDG 12), Climate action (SDG 13), Life below water (SDG 14), Life on land (SDG 15), Peace, justice, and strong institutions (SDG 16), and Partnerships for the goals (SDG 17).

10. There are How many sustainable goals? [1 Mark] [80%]****

The United Nations created 17 world development goals call the Sustainable Development Goals (SDGs).

**11. Write a short notes on Low carbon lifestyle (5 Marks)
(Imp)***** [60%] [BHALOTIA] [9883034569]**

Low carbon lifestyle

A low-carbon economy (LCE) is a concept for a desirable economy which has relatively low greenhouse gas (GHG) emissions per person. GHG emissions due to human activity are the dominant cause of observed climate change since the mid-20th century.

There are many strategies and approaches for moving to a low-carbon economy, such as encouraging renewable energy transition, efficient energy use, energy conservation, electrification of transportation (e.g. electric vehicles), carbon capture and storage, climate-smart agriculture

Benefits for the environment

A low carbon lifestyle is one that aims to reduce greenhouse gas emissions and minimize the impact of human activities on the climate.

A low-carbon lifestyle reduces greenhouse gases and saves resources. It lowers our exposure to chemicals and pollution. For a healthy planet and a healthy life, adopt this sustainable lifestyle and think twice before consumption. Take only what we need. Make a better choice.

12. Write a short notes on Mission LiFE (Lifestyle for Environment) [5 Marks] [60%] (Imp)* [BHALOTIA]**

Mission LiFE being launched in the 75th year of India's independence, a comprehensive and non-exhaustive list of 75 individual LiFE actions across 7 categories is identified such that most actions are:

- (a) Specific and measurable
- (b) Easy to practice by individuals, communities and institutions, with minimal supply-side dependencies
- (c) Non-disruptive to ongoing economic activity, and, in fact, promoting economic activity in the foreseeable future

Mission LiFE (Lifestyle for Environment) is a global mass movement led by India to nudge individual and community behavioural change in order to reduce emissions, protect the environment and conserve resources.

Mission LiFE seeks to translate the vision of LiFE into measurable impact. It is designed with the objective to mobilise at least one billion Indians and other global citizens to take individual and collective action for protecting and conserving the environment in the period 2022–28.

As a global programme, Mission LiFE envisions three core shifts in our collective approach towards sustainability

MCQ of 1 Mark Each

1. The term Environment is derived from an old French word “enviro” means [BHALOTIA]
 - (a) Outside
 - (b) Surroundings
 - (c) Inside
2. The term “Environment” means [BHALOTIA]
 - (a) Sum total of all conditions that the life and development of all organisms on earth
 - (b) A beautiful earth
 - (c) Earth and water
3. The Environment includes: [BHALOTIA]
 - (a) Abiotic Factors
 - (b) Biotic Factors
 - (c) Abiotic & Biotic Factors
4. The study of environmental components includes _____ disciplines. [BHALOTIA]
 - (a) All
 - (b) Five
 - (c) Ten
5. The term sustainable development was coined by a commission headed by [VVI] [90%]****
 - (a) Brundtlands
 - (b) Al Gore
 - (c) Paul Elrich
6. _____ represents the very first global action plan intended to promote sustainable development.
 - (a) Agenda 21
 - (b) Montreal Protocol
 - (c) Kyoto Protocol
7. In Agenda 21, twenty one represent [BHALOTIA]
 - (a) 21st century
 - (b) 21 Countries
 - (c) 21 Agendas
8. The Sustainable Development Goals a collection of ____ interlinked objectives [VVI] [90%]****
 - (a) 17
 - (b) 30
 - (c) 21
 - (d) 25
9. Agenda 2030 is related to _____ [BHALOTIA]
 - (a) Sustainable Development Goals
 - (b) Low carbon lifestyle
 - (c) Mission LiFE
10. Mission LiFE was announced by Prime Minister of India, _____ [BHALOTIA]
 - (a) Shri Narendra Modi
 - (b) Dr. Manmohan Singh

Unit 2:

Ecology and Ecosystems

1. What is Ecology? [Very imp] [1 Mark MCQ] [Important] **[90%]

- **Ecology was first devised by Ernst Haeckel, a German Zoologist. (important)*******
- Ecology is the study of organisms, the environment and how the organisms interact with each other and their environment.
- The main aim of ecology is to understand the distribution of biotic and abiotic factors of living things in the environment.

2. What is Ecosystem? [Very imp] [1 Mark MCQ]* [99%]**

- **A.G. Tansley in 1935 proposed the term “ecosystem”. (important)*******
- An ecosystem is a geographic area where plants, animals, and other organisms, as well as weather and landscape, work together to form a bubble of life. Ecosystems contain biotic or living, parts, as well as abiotic factors, or nonliving parts.
- Natural ecosystems include forests, grasslands, deserts, wetlands such as ponds, rivers, lakes, sea.
- Man-modified ecosystems include agricultural patterns, and patterns of urban or industrial land use.

3. What are the types of ecosystem services? [BHALOTIA]

Ecosystem services are classified into four types:

1. Provisioning Services

This includes the products/raw materials or energy outputs like food, water, medicines and other resources from ecosystems. Ecosystems are a source of food, water, medicines, wood, biofuels, etc.

2. Regulating Services

This includes the services which regulate the ecological balance. For example, terrestrial environs like forest purify and regulates air quality, prevent soil erosion, and control greenhouse gases. Biotic components such as birds, rats, frogs, act as natural controllers and thus help in pest and disease control. Hence, ecosystems act as regulators.

3. Supporting services

Supporting services form the basis for other services. They provide habitat for different life forms, retain biodiversity, nutrient cycling, and other services for supporting life on the earth.

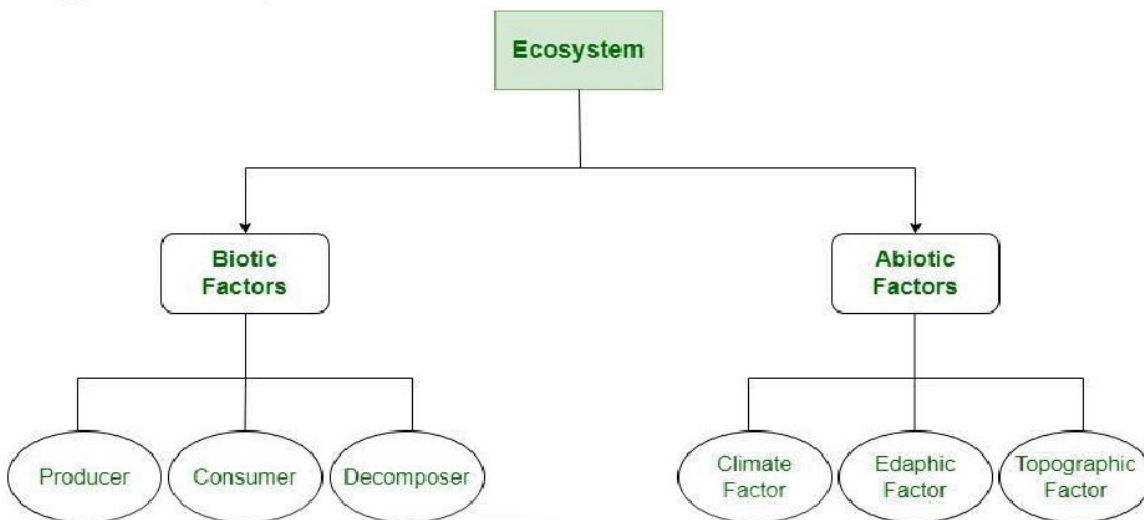
4. Cultural services

It includes tourism; provides recreational, aesthetic, cultural and spiritual services, etc

**4. What are the two main components of Ecosystem. [2 Marks]
[80%] [Very Important]***** [BHALOTIA] [9883034569]**

The structure of an ecosystem is made of two main components: biotic and abiotic components. The biotic component interacts with the abiotic components to maintain the flow of energy. The energy is distributed in the environment. The ecosystem includes 2 main components for a working ecosystem:

- (a) Biotic Component
- (b) Abiotic Component



5. What are Biotic and Abiotic Factors? [70%] [2 Marks] [60%]***

Abiotic components

Abiotic components are non-living chemical and physical factors of an ecosystem. A few examples of abiotic components include sunlight, soil, air, moisture minerals and more.

Biotic components

Biotic components are living factors of an ecosystem. A few examples of biotic components include bacteria, animals, birds, fungi, plants, etc. It can be classified as Autotrophic organisms that produce their own food and heterotrophic organisms which depend on other organisms for food. This classification is based on nutritional requirements of the organism.

6. Producers (Autotrophic components) [Imp for MCQ] [70%] [1M]

The producers are the autotrophic elements—chiefly green plants. They use radiant energy of sun in photosynthetic process whereby carbon dioxide is assimilated and the **light energy is converted into chemical energy.** The chemical energy is actually locked up in the energy rich carbon compounds. Oxygen is evolved as by-product in the photosynthesis. This is used in respiration by all living things. Algae and other hydrophytes of a pond, grasses of the field, trees of the forests are examples of producers.

**7. Consumers (Heterotrophic components) [Very Imp for MCQ]
[1 Mark] [70%]** [BHALOTIA] [9883034569]**

Consumers (Heterotrophic components):

These are the organisms that take their nutrition from the food that is made by the producers.

- (i) **Primary Consumers (herbivorous):** These organisms feed directly from the producers. They are herbivorous animals like deer, rabbit, cow, buffalo, and giraffes.
- (ii) **Secondary Consumers (Omnivores & Carnivores):** These organisms feed on the primary consumers for their nutrition. These are carnivorous and omnivorous animals like crows, dogs, cats, snakes.
- (iii) **Tertiary Consumers (Carnivores):** These organisms feed on secondary consumers. These are only carnivores where they only consume meat usually by preying on prey. Eg., lion, tiger, cheetah
- (iv) **Quaternary Consumers:** These organisms feed on the tertiary consumers for their nutrition. Eg; Eagle, which consumes a snake that consumes a frog that consumes a fly.

8. Decomposers or reducers and transformers: [BHALOTIA]

Decomposers or reducers and transformers:

These organisms break down dead matter and gain their nutrition, and the decomposed material returns back to the land, which will again be utilized by the producers to produce more food. Decomposers and transformers are the living components of the ecosystem and they are fungi and bacteria.

9. Types of Ecosystem [BHALOTIA] [9883034569]

An ecosystem can be small or large. The ecosystem can be classified into 2 types:

- (a) Aquatic Ecosystem
- (b) Terrestrial Ecosystem

10. Aquatic Ecosystem [BHALOTIA] [9883034569]

Oceans, rivers, seas, lakes, springs, and other water bodies are aquatic biomes. The bulk of the earth's surface is covered by the water. Two-thirds of the earth's surface is made up of oceans, seas, the intertidal zone, reefs, the seabed, and rock pools. This ecosystem includes plants, fishes, amphibians, coral reefs, huge sea creatures, and insects.

An aquatic ecosystem is divided into 2 types:

- (a) Freshwater Ecosystem
- (b) Marine Ecosystem

11. Freshwater Ecosystem [Very Imp for MCQ] [90%] [1 Mark]**

- It includes all the rivers, lakes, ponds, and water bodies that are not salted.
- 3% of the earth's water is fresh.
- 2.5% of the earth's fresh water is unavailable: locked up in glaciers etc
- 0.5% of the earth's water is available fresh water.
- There are three types of this ecosystem
 - (a) **Lotic:** In a lotic freshwater ecosystem, the water bodies travel in one direction. Numerous rivers and streams start at their sources and meet rivers or oceans at their mouths as they travel toward their destinations.
 - (b) **Lentic:** All non-flowing (still) waterways, such as ponds, swamps, bogs, lagoons, and lakes are lentic ecosystems.
 - (c) **Wetlands:** The wetlands where the soil remains saturated for most of the time period. Soil and water are so close together; wetlands are highly productive.

12. Marine Ecosystem: [BHALOTIA] [9883034569]

Marine Ecosystem: It includes all the oceans and seas and constitutes about 71% of the earth's surface. About 97% of the water on earth falls under this category. Sharks, whales, dolphins, seals, walrus, and many more come under this ecosystem.

13. Terrestrial ecosystem [BHALOTIA] [9883034569]

A terrestrial ecosystem is a land-based community of organisms and the interactions of biotic and abiotic components in a given area. These terrestrial ecosystems are climate-dependent.

- (a) **Forests:** A forest is a type of ecosystem that includes tropical rainforests, plantation forests, and temperate deciduous forests.
- (b) **Grasslands:** In this environment, grass and herbs predominate.
- (c) **Tundra:** Tundra has extreme environmental conditions like that of the polar region.
- (d) **Deserts:** Deserts are unproductive land surfaces with extreme temperature swings and inadequately maintained species. One of the driest land regions on the globe.

14. What are the Functions of Ecosystem? [30%] [2 Marks]

Following are some of the functions of the ecosystem;

- (a) It regulates different life processes.
- (b) The various components of an ecosystem are designed in a manner to support the life systems.
- (c) It regulates various types of nutrient cycles.
- (d) It maintains the balance of energy flow between various levels of the ecosystem.
- (e) It regulates the cycling of nutrients between abiotic and biotic factors.

15. Functional Units of Ecosystem [BHALOTIA] [9883034569]

The ecosystem's function is to maintain its various parts working together. It is a natural process of a transfer of energy in different biotic and abiotic elements of the world. Ecosystems maintain all the important ecological processes, including nutrient cycling. Ecosystems have different functional units those are:

- (a) **Production:** Any ecosystem must have a consistent supply of solar energy to survive and function. Primary production is influenced by the types of plants that live there
- (b) **Decomposition:** Decomposition is the breakdown of complex organic matter by decomposers into inorganic components such as carbon dioxide, water, and nutrients. The primary decomposers in many ecosystems are fungi and bacteria.
- (c) **Energy flow:** Radiant energy from the **sun is the primary source of energy in all ecosystems.** Plants use the sun's energy to change carbon dioxide and water into simple, energizing carbohydrates. **Energy goes unidirectionally** from the sun to producers, herbivores, and carnivores.
- (d) **Nutrient cycling:** Chemical substances known as nutrients are substances that organisms need for growth and the maintenance of life.

16. Energy flow in an ecosystem: [Very Imp for MCQ] [90%] [1M]

The ultimate source of energy (for most ecosystems) is the sun. (Important)***

The energy flow takes place via the food chain and food web. During the process of energy flow in the ecosystem, plants being the producers absorb sunlight with the help of the chloroplasts and a part of it is transformed into chemical energy in the process of photosynthesis.

This energy is stored in various organic products in the plants and passed on to the primary consumers in the food chain when the herbivores consume (primary consumers) the plants as food.

Then followed by the secondary consumers. When these herbivores are ingested by carnivores of the first order (secondary consumers) further degradation will occur. Finally, when tertiary consumers consume the carnivores, energy will again be degraded. Decomposers remove the last energy from the remains of organisms.

Thus, the energy flow is unidirectional in nature. (Important)***

The chemical energy of food is the main source of energy required by all living organisms. This energy is transmitted to different trophic levels along the food chain.

17. What is Food chain? [90%] [2 Marks] [Very Important]*****

A food chain refers to the order of events in an ecosystem, where one living organism eats another organism, and later that organism is consumed by another larger organism. The flow of nutrients and energy from one organism to another at different trophic levels forms a food chain.

Grass (Producer) —Goat (Primary Consumer) — Man (Secondary consumer)

18. Components of food chain [BHALOTIA] [9883034569]

The food chain consists of four major parts, namely:

- (a) **The Sun**: The sun is the initial source of energy, which provides energy for everything on the planet.
- (b) **Producers**: The producers in a food chain include all autotrophs such as phytoplankton, cyanobacteria, algae, and green plants. This is the first stage in a food chain.
- (c) **Consumers**: Consumers are all organisms that are dependent on plants or other organisms for food.
- (d) **Decomposers**: Decomposers are organisms that get energy from dead or waste organic material. This is the last stage in a food chain.

19. Example of food chain [BHALOTIA] [9883034569]

Aquatic food chain:

Phytoplankton ----- zooplankton -----small fish ----- larger fish or tertiary consumers.
(main Producer)

Terrestrial food chain:

Grasses, flowers, and seeds -----butterflies, birds and deer ----- decomposed by fungi and insects
Grass (Producer) —Goat (Primary Consumer) — Man (Secondary consumer)

20. What is Food web? [60%] [2 Marks] [Important]***

Several interconnected food chains form a food web. A food web is similar to a food chain but the food web is comparatively larger than a food chain. Occasionally, a single organism is consumed by many predators or it consumes several other organisms. Due to this, many trophic levels get interconnected. The food chain fails to showcase the flow of energy in the right way. But the food web is able to show the proper representation of energy flow, as it displays the interactions between different organisms.

21. Basic concept of population and community ecology: [Very Important for MCQ] [1 Mark] *** [BHALOTIA] [80%]**

Populations

Populations consist all of the species living within a specific area, and populations fluctuate based on a number of factors.

Community

A community comprises populations of various species, such as plants, animals, bacteria, and fungi, that coexist in one place. These populations work together to create a biological community that interacts and shares resources.

Community ecology

Community ecology is the study of the interactions between species in communities on many spatial and temporal scales, including the distribution, structure, abundance, demography, and interactions between coexisting populations.

Stratification:

Natural forest communities possess a number of layers or stores or strata related to the height of plants, for example, tall trees, smaller trees, shrubs and herbaceous layers form the different strata. This phenomenon in a plant community is called stratification.

Eco-tone [Important for MCQs]*****

- (a) **An ecotone is a zone of junction or a transition area between two biomes (diverse ecosystems). (Important)******
- (b) Ecotone is the zone where two communities meet and integrate.
- (c) For e.g. the mangrove forests represent an ecotone between marine and terrestrial ecosystem.
- (d) Other examples are grassland (between forest and desert), estuary (between fresh water and salt water) and riverbank or marshland (between dry and wet).

Edge Effect – Edge Species [Important for MCQs]*****

- (a) **Edge effect refers to the changes in population or community structures that occur at the boundary of two habitats (ecotone). (Important)******
- (b) Sometimes the number of species and the population density of some of the species in the ecotone is much greater than either community. This is called edge effect.
- (c) The organisms which occur primarily or most abundantly in this zone are known as edge species.
- (d) In the terrestrial ecosystems edge effect is especially applicable to birds.
- (e) For example, the density of birds is greater in the ecotone between the forest and the desert.

Habitat –

A habitat is the specific physical place in which an organism lives (Surroundings in which an organism lives (home).

A habitat should not be confused with an ecosystem: the habitat is the actual place of the ecosystem, whereas the ecosystem includes both the biotic and abiotic factors in the habitat.

Ecological Niche:

The word niche comes from the French word *nicher*, which means “to nest.” Niche refers to the unique functional role and position of a species in its habitat or ecosystem.

A species’ ecological niche can be defined as the range of resources and conditions allowing the species to maintain a viable population. Theoretically, if two species have the same niche, one species will exclude the other. The corollary is that the niches of coexisting species must differ. Niches of coexisting species can be similar, but not identical. In other words, a niche is how an organism “makes a living.

22. Ecological succession [2 Marks] [60%] [Important]**

Ecological succession is the process by which natural communities replace (or “succeed”) one another over time. For example, when an old farm field is abandoned and left alone for many years, it gradually becomes a meadow, then a few bushes grow, and eventually, trees completely fill in the field, producing a forest.

23. Ecological pyramid (RKB) [BHALOTIA] [9330960172]

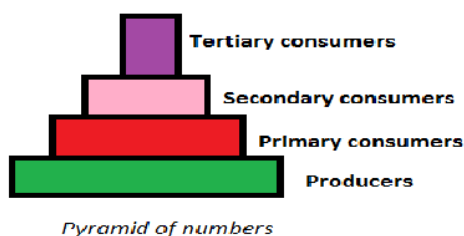
What is an Ecological Pyramid?

These are the graphical representations of the number, energy, and biomass of the trophic level of an ecosystem.

Types of Ecological Pyramid

Three types of ecological pyramids exist.

1. Pyramid of Numbers



2. Pyramid of energy (3) Pyramid of Biomass

24. Vocabulary** [BHALOTIA] [9330960172/9883034569]**

Term	Definition
carnivore	Organism that feeds on other animals.
consumer	Organism that must consume other organisms to obtain food for energy.
decomposer	Organism that obtains nutrients and energy by breaking down dead organisms and animal wastes.
food chain*****	Diagram that shows feeding interactions in an ecosystem through a single pathway.
food web*****	Diagram that shows feeding interactions between many organisms in an ecosystem through multiple intersecting pathways.
herbivore	Animal that eats producers to obtain energy.
producer*****	Organism that produces food for itself and other organisms.
Autotrophs*****	Green plants (producers)
Heterotrophs	Herbivore (primary consumers)
Heterotrophs	Carnivores (secondary consumers)
Heterotrophs	Carnivore (tertiary consumers)
ecotone*****	An ecotone is a zone of junction or a transition area between two biomes
Edge effect *****	Edge effect refers to the changes in population or community structures that occur at the boundary of two habitats
Habitat	Surroundings in which an organism lives (home).
Ecological Niche	Niche refers to the unique functional role and position of a species in its habitat or ecosystem.
Ecological succession	Ecological succession is the process by which natural communities replace (or “succeed”) one another over time

MCQ of 1 Mark Each

1. **The Branch of science that studies the relationship of living organisms with each other**
 - (a) Biology
 - (b) **Ecology**
 - (c) Zoology
2. **The word ecology was coined by the German zoologist _____ [Very imp] [90%]**
 - (a) Alexander Hemming
 - (b) Ronald Ross
 - (c) **Ernst Haeckel**
3. **Study of inter-relationship between organisms and their environment is [BHALOTIA]**
 - (a) **Ecology**
 - (b) Ecosystem
 - (c) Ethnology
4. **Non-living components of ecosystem are called _____ [BHALOTIA]**
 - (a) Biotic
 - (b) **Abiotic**
 - (c) Free living
5. **The word ecosystem was coined by _____ in 1935. [Very imp] [90%] [BHALOTIA]**
 - (a) Alexander Hemming
 - (b) Ernst Haeckel
 - (c) **A.G. Tansley**
6. **The _____ are the autotrophic elements—chiefly green plants [imp] [60%]**
 - (a) **Producers**
 - (b) Consumers
 - (c) Decomposers
7. **Transitional zone between adjoining ecosystems is known as _____ [imp] [70%]**
 - (a) **Producers**
 - (b) **Edge effect**
 - (c) Root effect
 - (d) Ecological niche
8. **An ecosystem gradually merges with an adjoining one through a transitional zone is called the _____ [imp] [50%] [BHALOTIA]**
 - (a) Ecological niche
 - (b) ecological footprint
 - (c) **Ecotone**
9. **Autotrophs are _____ [imp] [70%] [BHALOTIA]**
 - (a) Consumers
 - (b) Herbivores
 - (c) **Producers**

10. The ultimate source of energy (for most ecosystems) is the _____ [imp] [80%]
(a) Sun
(b) Green Plant
(c) Sugar
11. Photosynthesis is found in [imp] [80%] [BHALOTIA]
(a) Producers
(b) Decomposers
(c) Consumers
12. An example of an abiotic component [imp] [70%] [BHALOTIA]
(a) Plants
(b) Soil
(c) Animals
13. A food chain starts with a _____ [imp] [50%] [BHALOTIA]
(a) Producer
(b) Consumers
(c) Decomposers and transformers
14. Plants are called _____ [imp] [30%] [BHALOTIA]
(a) Producer
(b) Consumers
(c) Decomposers and transformers
15. The energy flow in ecosystem is [very imp] [90%] [BHALOTIA]
(a) One – way
(b) Two – way
(c) Three – way
16. The complex network of interconnected food chains is called _____ [imp] [70%]
(a) Food web
(b) Ecological pyramid
(c) Ecology chain
17. A zone of vegetation spreading or separating two different types of communities is called _____ [imp] [60%] [BHALOTIA]
(a) Eco-tone
(b) Ecological Niche
(c) ecological footprint
18. _____ is a small habitat within a habitat, in which only a single species can survive
(a) Eco-tone
(b) Ecological Niche
(c) ecological footprint
19. _____ are a main producer in the aquatic web. [imp] [70%] [BHALOTIA]
(a) Phytoplankton

Unit 3: Natural Resources

1. What do you mean Renewable and Non-renewable resources. [2 Marks] [90%] [Very Important]****

Renewable Resources

The resources which cannot be exhausted even after continuous utilisation are termed renewable resources. Examples of renewable resources are the sun, wind, and tidal energy. [Important]****

Non-renewable Resources

The resources which cannot be immediately replaced once they are depleted are called non-renewable resources. Examples of non-renewable resources include fossil fuels, such as coal, petroleum, natural gas and rare minerals, nuclear energy etc. [Important]****

Fossil fuel

Fossil fuels are made from decomposing plants and animals. These fuels are found in the Earth's crust and contain carbon and hydrogen, which can be burned for energy. Coal, oil, and natural gas are examples of fossil fuels. [Important]****

2. Land resources [BHALOTIA] [9883034569]

Land is a vital resource to humankind, like air and water. The term "land resources" encompasses the physical, biotic, environmental, infrastructural and socio-economic components of a natural land unit, including surface and near-surface freshwater resources important for management.

3. Land use change [BHALOTIA] [9883034569]

Land use change simply refers to the conversion of a piece of land's use by humans, from one purpose to another.

4. What is Land degradation? [2 Marks] [80%] [Imp]

Land degradation: The deterioration or loss of the productive capacity of the soils for present and future is called Land degradation. It is a global challenge that affects everyone through food insecurity, higher food prices, climate change, environmental hazards, and the loss of biodiversity and ecosystem services. Land degradation is happening at an alarming pace, contributing to a dramatic decline in the productivity of croplands and rangelands worldwide.

Causes of Land Degradation:

(a) Deforestation:

Deforestation is taking place at a faster rate due to increasing demands of timber, fuel and forest products which results into degradation of land resources.

(b) Overgrazing:

Overgrazing refers to excessive eating of grasses and other green plants by cattle.

(c) Agricultural practices:

The modern agricultural practices, excessive use of fertilizers and pesticides has adversely degraded the natural quality and fertility of the cultivation land.

(d) Industrialization:

Development of industries for the economic growth of the country leads to excessive deforestation and utilization of land in such a way that it has lost its natural up gradation quality.

(e) Urbanization:

Increasing growth of population and demand for more residential areas and commercial sectors is also one of the reasons for land degradation.

5. Soil erosion [BHALOTIA] [9883034569]

Soil Erosion

It is a process in which the top fertile layer of soil is lost. Due to soil erosion, the soil becomes less fertile. The top layer of soil is very light which is easily carried away by wind and water. The removal of top soil by the natural forces is known as soil erosion.

Causes of Soil Erosion

Various agents, like wind, water, deforestation, overgrazing by cattle, etc., cause soil erosion.

6. Soil conservation [BHALOTIA] [9883034569]

Prevention of soil erosion is also called conservation of soil. The soil erosion can be prevented by the following ways:

1. Afforestation
2. Crop Rotation
3. Terrace Farming
4. Building Dams
5. Shelterbelts
6. Embankments
7. Van Mahotsav

7. What is Desertification? [2 Marks] [40%] [Imp]**

Desertification is the degradation process by which a fertile land changes itself into a desert by losing its flora and fauna, this can be caused by drought, deforestation, climate change, human activities or improper agriculture. Desertification is a process of degradation of the land.

8. What is Deforestation? [2 Marks] [40%] [Imp]**

Deforestation is when humans remove or thin forests for lumber or to use the land where the trees stood for crops, grazing, extraction (mining, oil, or gas), or development as the population increases and people migrate.

Causes for Deforestation:

1. Agriculture:
2. Commercial logging:
3. Mining:
4. Increase in population:
5. Urbanization and industrialization:
6. Construction of dam reservoirs:
7. Forest fires:
8. Overgrazing:

Consequences of Deforestation:

1. Food problems:
2. Exposing soil to heat and rain:
3. Flooding:
4. Displacement of indigenous communities:
5. Climate change:
6. Economic loss:
7. Health issues:

Solutions to Deforestation

Trees play a vital role in protecting our environment in several ways so we should protect the forest:

- Afforestation: The best way to stop deforestation is replanting.
- Ban on cutting of trees and new trees and planting more.
- There should be an implementation of regulations of laws at organizational and governmental levels due to the extent of deforestation.
- Spread the awareness about sensitization and organize educative campaigns about the effects of deforestation.

9. Water: Use and over-exploitation of surface and ground water [BHALOTIA] [9883034569]

Water resources:

Water is the most abundant, inexhaustible renewable resource. It covers 70% of the globe in the form of oceans, rivers, lakes, etc. Of this 70%, only 3% is available as freshwater. From this 3%, roughly 2% is frozen in polar icecaps and only a fraction of the remaining 1% is used as drinking water (potable). 90% of the water is utilized for agricultural purposes in India.

Use of surface and ground water

Surface water and groundwater are both important sources for community water supply needs. Groundwater is a common source for single homes and small towns, and rivers and lakes are the usual sources for large cities. Although approximately 98 percent of liquid fresh water exists as groundwater, much of it occurs very deep. This makes pumping very expensive, preventing the full development and use of all groundwater resources.

- (a) **Consumptive use:** In such uses, water is completely utilized and cannot be reused. Ex: Domestic, industrial and irrigation
- (b) **Non-consumptive use:** In such uses, water is not completely utilized and is reused Ex: Hydropower plant
- (c) **Other uses:** Water is used for domestic purposes like drinking, bathing, cooking, washing. etc.

Causes of Groundwater & Surface Depletion

- (a) Increase in Irrigated Area
- (b) Indiscriminate water-tapping
- (c) Decreasing jungles
- (d) Melting glaciers
- (e) Global warming
- (f) Politics of subsidy
- (g) Wrong Agricultural practices

Causes of Groundwater & Surface Depletion

- (a) Contamination of ground water
- (b) Drying up rivers
- (c) Impact on living organism
- (d) Fuelling migration

Prevention and Solutions of Groundwater Depletion

- (a) Limit of water-extraction
- (b) Change in crop-patterns
- (c) Protection and enrichment of water resources
- (d) Diverting River Streams
- (e) Building reservoirs
- (f) Plantation drives
- (g) Increasing awareness

10. Floods [BHALOTIA] [9883034569]

Floods are the most frequent type of natural disaster and occur when an overflow of water submerges land that is usually dry. In 2011 a tsunami struck Japan, leaving more than 10,000 people unaccounted for in one coastal town alone

The Causes of Floods: Heavy Rainfall at River Sources; Snow Melt: Irresponsible Damming: Natural Disasters Out at Sea

11. Droughts [BHALOTIA] [9883034569]

Drought is a prolonged dry period in the natural climate cycle that can occur anywhere in the world. It is a slow onset phenomenon caused by a lack of rainfall.

12. Conflicts over water (international & Inter-state)

Water conflicts can occur on the intrastate and interstate levels. Interstate conflicts occur between two or more neighboring countries that share a transboundary water source, such as a river, sea, or groundwater basin.

Example of international Water conflict:

- China-India: The Brahmaputra River
- Pakistan-India: The Sindhu River (Indus water Dispute)

Examples of Inter-State Water Disputes

Here are a list of some Inter-State Water Disputes and the states concerned:

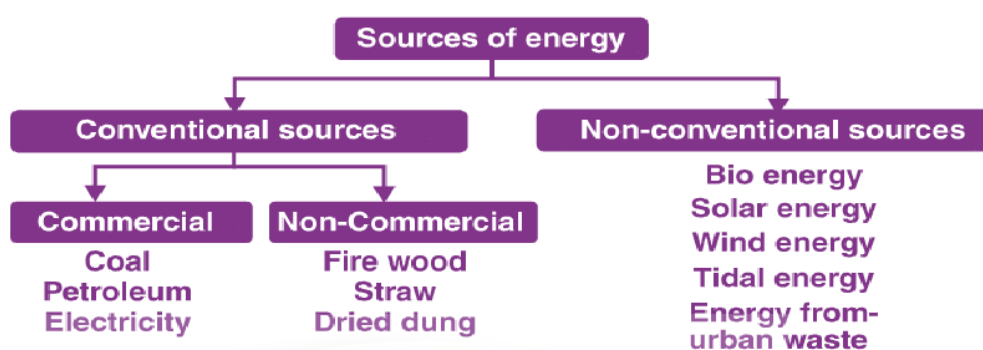
Inter-State Rivers	States Concerned
Ravi, Beas and Sutlej	Punjab, Haryana and Rajasthan
Cauvery	Tamil Nadu, Karnataka, Kerala, Puducherry
Narmada	Madhya Pradesh, Gujarat, Maharashtra, Rajasthan

13. Environmental impacts of energy generation

Energy and environmental problems are closely related, since it is nearly impossible to produce, transport, or consume energy without significant environmental impact.

The environmental problems directly related to energy production and consumption include air pollution, climate change, water pollution, thermal pollution, and solid waste disposal.

14. Alternative and non-conventional energy sources [Very Important for MCQ] [1 Marks]** ****



Conventional Sources of Energy

Conventional Sources of Energy are also known as non-renewable sources of energy and are available in limited quantity apart from hydro-electric power. Further, it is classified under commercial and non-commercial energy. Example: Coal, Petroleum, Electricity, Fire wood, Dried dung etc

Non-Conventional Sources of Energy

Non-conventional sources are also known as renewable sources of energy. Examples of non-conventional sources of energy include solar energy, bioenergy, tidal energy and wind energy.

15. What is Green energy? (2 Marks) (Very imp)* (90%)**

What is Green Energy?

Green energy is energy that can be produced using a method, and from a source, that causes no harm to the natural environment.

As a source of energy, green energy often comes from renewable energy technologies such as solar energy, wind power, geothermal energy, biomass and hydroelectric power. Each of these technologies works in different ways, whether that is by taking power from the sun, as with solar panels, or using wind turbines or the flow of water to generate energy.

16. What's the difference between green energy and renewable energy? [BHALOTIA] [9883034569]

The terms 'green energy' and 'renewable energy' are often used interchangeably, but there is one essential (and sometimes confusing) difference between them. While most green energy sources are also renewable, not all renewable energy sources are considered entirely green.

Green energy = no harm to the environment

Renewable energy = sources that replenish naturally, such as the sun and the wind

17. Types of Green energy. [Imp for MCQ] [1 Mark] [40%]

The six most common forms are as follows:

1. **Solar Power:** This common type of renewable energy is usually produced using photovoltaic cells that capture sunlight and turn it into electricity
2. **Wind Power:** wind energy uses the power of the flow of air around the world to push turbines that then generate electricity.
3. **Hydropower:** this type of green energy uses the flow of water in rivers, streams, dams or elsewhere to produce electricity.
4. **Geothermal Energy:** This type of green power uses thermal energy that has been stored just under the earth's crust.
5. **Biomass:** Biomass power plants use wood waste, sawdust and combustible organic agricultural waste to create energy. While the burning of these materials releases greenhouse gas these emissions are still far lower than those from petroleum-based fuels.
6. **Biofuels:** Rather than burning biomass as mentioned above, these organic materials can be transformed into fuel such as ethanol and biodiesel. Having supplied just 2.7% of the world's fuel for transport in 2010, the biofuels are estimated to have the capacity to meet over 25% of global transportation fuel demand by 2050.

18. Natural resource accounting (NRA) [BHALOTIA]

- **Natural Resource Accounting is a process of estimating the value of natural resource depletion and environment degradation due to economic activities.**
- It is based on the concept - 'measurement of a resource leads to its better management'.
- The need for NRA took its first step at the United Nations (UN) conference on Human Environment in 1970 (Stockholm Conference) when the relationship between economic development and environmental degradation was discussed for the first time.
- The Brundtland Commission, set up by the UN, articulated the idea of close association between the environment and economic activities in 1987, which was followed up by environmental accounting and the Earth Summit at Rio de Janeiro in 1992.

MCQ of 1 Mark Each

1. The resources that can be replaced by natural ecological cycle is called _____
 - (a) **Renewable**
 - (b) Non-renewable
 - (c) Exhaustible
2. Air, water, wind, solar energy etc are examples of _____ resources [80%]****
 - (a) **Renewable**
 - (b) Non-renewable
 - (c) Exhaustible
3. _____ resources are those natural resources that are available in limited quantity.
 - (a) Renewable
 - (b) **Non-renewable**
 - (c) Natural
4. Coal, natural gas, petroleum etc are examples of _____ [Important] [70%]****
 - (a) Renewable
 - (b) **Non-renewable**
 - (c) Natural
5. Fossil fuels like coal, petroleum, natural gas etc are _____ resources. [70%]****
 - (a) Renewable
 - (b) **Non-renewable**
 - (c) Natural
6. Coal, petroleum, natural gas etc are example of _____ [Important] [90%]****
 - (a) **Fossil fuels**
 - (b) Renewable resources
 - (c) Natural resources
7. Which of the following is a renewable source of energy?* [BHALOTIA]
 - (a) **Hydro-Energy**
 - (b) Fossil fuel
 - (c) Nuclear energy
8. Which of the following is a non-renewable source of energy? [BHALOTIA]
 - (a) Hydro-Energy
 - (b) **Nuclear energy**
 - (c) Wind energy
9. The removal of topsoil by the natural forces is known as _____ [BHALOTIA]
 - (a) **Soil Erosion**
 - (b) Land Degradation
 - (c) Soil conservation
10. _____ is the major consequences of direct interference of human activities in the natural phenomenon.
 - (a) Soil Erosion
 - (b) **Land Degradation**

11. **Planting new trees and plants is _____ [BHALOTIA]**
(a) **afforestation**
(b) Deforestation
(c) Contour Farming
12. _____ **is the process by which an area becomes (or is made to become) desert-like.**
(a) **Desertification**
(b) Deforestation
(c) over-exploitation
13. _____ **means cutting down the trees to a large extent [Important] [60%]******
(a) Desertification
(b) **Deforestation**
(c) over-exploitation
14. **Natural resources like wind, tides, solar, biomass, etc generate energy which is known as _____**
(a) **Non-conventional resources**
(b) Non-Renewable resources
(c) Exhaustive resources
15. **Solar Energy, Wind Energy, Tidal Energy, Geothermal Energy, Biomass etc are examples of _____**
(a) **Non-conventional resources**
(b) Non-Renewable resources
(c) Exhaustive resources
16. **In photosynthesis, green plants absorb _____ and convert it into chemical energy.**
(a) **Solar Energy**
(b) Geothermal Energy
(c) Wind Energy
17. **One of India's largest windmill farm is in _____ [Important] [30%]******
(a) **Kanyakumari**
(b) Kashmir
(c) Chennai
18. _____ **is any energy type that is generated from natural resources, such as sunlight, wind or water. [Important] [70%]******
(a) **Green energy**
(b) Gray Energy
(c) Blue Energy
19. **This type of green power uses thermal energy that has been stored just under the earth's crust. [Important] [60%]******
(a) Solar Power
(b) Hydropower
(c) **Geothermal Energy**
20. _____ **power plants use wood waste, sawdust and combustible organic agricultural waste to create energy. [Important] [40%]******
(a) Hydropower
(b) **Biomass**

Unit 4: Biodiversity and Conservation

1. What is Biodiversity? [2 Marks] [very imp] [98%]****

Biodiversity, also called biological diversity, the variety of life found in a place on Earth or, often, the total variety of life on Earth. A common measure of this variety, called species richness, is the count of species in an area.

The Convention on Biological Diversity (CBD), which came into force in 1993, is the global policy framework for action to maintain biodiversity for future generations

2. Types of Biodiversity [BHALOTIA] [9883034569]

Biodiversity can be categorized into three main types:

Genetic Diversity

Every individual of a particular species differs from each other in its genetic makeup. This genetic variability among the members of any plant or animal species is known as genetic diversity.

Species Diversity

Species diversity can be defined as the variety of species within a particular region or habitat. This type of diversity can be found in both the natural ecosystem and agricultural ecosystem.

Ecosystem Diversity

There is a large diversity of different ecosystems that have distinctive species. This ecosystem varies with each other as per their habitats and the difference in their species.

3. Biogeographic zones of India [1 Mark MCQ] [90%]****

India is a megadiverse country. With only 2.4 per cent of the total land area of the world, the known biological diversity of India contributes 8 % to the known global biological diversity. In terms of Biogeography, **India has been divided into 10 Biogeographic zones** as shown in the below:

1. Trans Himalayan zone.
2. Himalayan zone
3. Desert zone.
4. Semiarid zone.
5. Western Ghat zone.
6. Deccan plateau zone.
7. Gangetic plain zone.
8. North east zone.
9. Coastal zone.
10. Islands present near the shore line.

4. Biodiversity patterns [BHALOTIA] [9883034569]

Several biodiversity patterns can occur within various species, communities, regions, habitats, biomes, ecosystems, and the entire earth. Charles Robert Darwin described three different patterns and levels of biodiversity.

1. Global Patterns of Biodiversity
2. Species Vary Locally
3. Species Vary Over Time

5. Global biodiversity hot spots [1 Mark MCQ] [90%]****

Around the world, 36 areas qualify as hotspots. Their intact habitats represent just 2.5% of Earth's land surface, but they support more than half of the world's plant species as endemics — i.e., species found no place else — and nearly 43% of bird, mammal, reptile and amphibian species as endemics.

6. Biodiversity hot spots of India [1 Mark MCQ] [90%]****

Four of the world's 36 biodiversity hotspots are located in India: The Himalayas, Western Ghats, Indo-Burma area, and Sundaland. Two of these, the Indo-Burma area and Sundaland, are distributed throughout South Asia and are not precisely contained within India's formal borders.

7. India as a mega-biodiversity nation [BHALOTIA]

India is one of the world's megadiverse countries, with 45,000 plant species and twice as many animal species. India has only 2.4 per cent of the world's land area, but it has 8.1 per cent of the world's species diversity, making it one of the world's 12 mega diversity countries.

8. Endangered species of India [1 Mark MCQ] [90%]****

A plant, animal or microorganism that is in immediate risk of biological extinction is called endangered species or threatened species. Endangered or threatened species is one whose number has been reduced to a critical number. Unless it is protected and conserved, it is in immediate danger of extinction. In India, 450 plant species have been identified as endangered species. 100 mammals and 150 birds are estimated to be endangered.

The RED-data book contains a list of endangered species of plants and animals. It contains a list of species of that are endangered but might become extinct in the near future if not protected. Some of the rarest animals found in India are:

1. Asiatic cheetah
2. Asiatic Lion
3. Indian Elephant
4. Indian Rhinoceros

9. Endemic species of India [BHALOTIA] [9883034569]

Species that are found only in a particular region are known as endemic species. Almost 60% the endemic species in India are found in Himalayas and the Western Ghats.

A few endangered Species in the world are listed below:

1. Giant Panda (China)
2. Siberian Tiger (Siberia)
3. Mountain Gorilla (Africa)
4. African Elephant (Africa)

Other important endangered species are:

1. Tortoise, Gharial, Python (Reptiles)
2. Peacock, Indian Bustard (Birds)
3. Capped monkey, Golden monkey (Primates)
4. Sandal wood tree (Tree)

10. Extinct species [BHALOTIA] [9883034569]

Extinct species is no longer found in the world.

11. Threats to biodiversity [BHALOTIA] [9883034569]

1. Habitat Loss

Today, major loss to biodiversity in the world has been done by man. Man has begun to overuse or misuse most of these natural ecosystems.

2. Poaching of wildlife

Poaching of wildlife for trade and commercial activities has been on the rise for the last many decades. It has been a significant cause of the extinction of hundreds of species and the endangerment of many more, such as whales and many African large mammal, Asian tigers, etc. Most extinction over the past several hundred years is mainly due to overharvesting for food, fashion, and profit.

3. Man-Wildlife Conflict

Man-wildlife conflict refers to the interaction between wild animals and people and the consequential negative impact on both of them. Human population growth and the resultant destruction of wildlife habitat for human habitation and economic prosperity create reduction of resources or life to some people and wild animals.

4. Biological invasions

A biological invasion is the successful introduction, establishment and spread of a species outside its native range, mostly driven by human activity

12. Conservation of biodiversity [BHALOTIA]

Biodiversity conservation refers to the protection, preservation, and management of ecosystems and natural habitats and ensuring that they are healthy and functional.

13. Objectives of Biodiversity Conservation

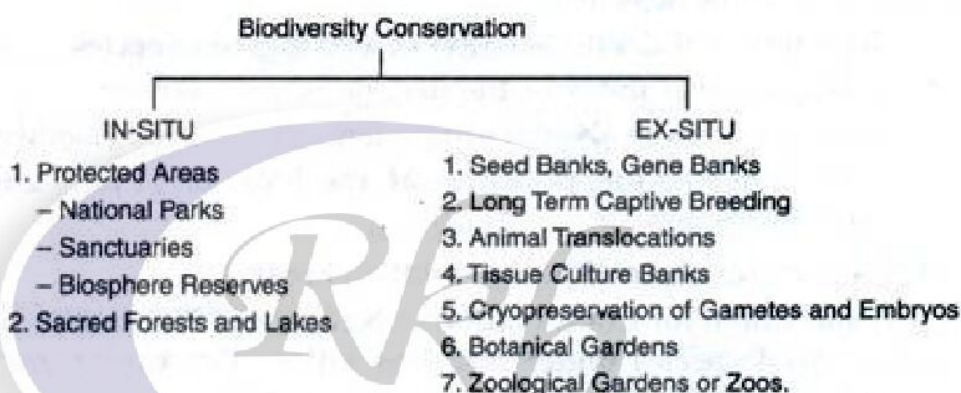
The three main objectives of Biodiversity Conservation are as follows-

1. To protect and preserve species diversity.
2. To ensure sustainable management of the species and ecosystems.
3. Prevention and restoration of ecological processes and life support systems.

14. Types of Conservation [1 Mark MCQ] [99%]****

Conservation can broadly be divided into two types:

1. In-situ conservation
2. Ex-situ conservation



15. In-situ Conservation [1 Mark MCQ] [99%]****

In Situ Conservation refers to the preservation and protection of the species in their natural habitat. It means the conservation of genetic resources in natural populations of plant or animal species. In situ conservation involves the management of biodiversity in the same area where it is found.

Different methods of In-situ conservation include

- (a) **biosphere reserves,**
- (b) **national parks,**
- (c) **wildlife sanctuaries,**
- (d) biodiversity hotspots,
- (e) gene sanctuary, and
- (f) sacred groves.

16. Biosphere Reserves [BHALOTIA] [9883034569]

These are national governments nominated sites, large areas (often up to 5000 square km) of an ecosystem where the traditional lifestyle and natural habitat of the inhabitants of that ecosystem are protected. They are mostly open to tourists and researchers. There are at present 18 Biosphere Reserves in India.

List of some major Biosphere Reserves of India:

Name	State
Sundarban	West Bengal
Nanda Devi	Uttarakhand
Manas	Assam
Gulf of Mannar	Tamil Nadu
Great Nicobar	Andaman and Nicobar Islands
Panchmarhi	Madhya Pradesh

17. National Parks: [BHALOTIA] [9883034569]

These are limited reserves maintained by the government for the conservation of wildlife as well as the environment. Human activities are prohibited in national parks and they are solely dedicated to the protection of natural fauna of the area. They mostly occupy an area of 100-500 square km. There are a total of 104 national parks in India, right now. The national parks may even be within a biosphere reserve. These are small reserves that are protected and maintained by the government. Its boundaries are well protected, where human activities such as grazing, forestry, habitat, and cultivation are restricted.

List of some major National Parks of India:

Name	State
Corbett National Park	Uttarakhand
Gir National Park	Gujarat
Kaziranga National Park	Assam
Nanda Devi National Park	Uttarakhand
Silent Valley National Park	Kerala
Sundarbans National Park	West Bengal
Kanger Ghati National Park (Kanger Valley)	Chhattisgarh

18. Wildlife Sanctuaries: [BHALOTIA] [9883034569]

Wildlife Sanctuaries are protected areas meant only for the conservation of wild animals. A few human activities such as cultivation, wood collection, and other forest product collection are allowed here, but they must not interfere with the conservation of the animals. Tourist visits are also allowed in these areas. There are a total of 551 wildlife sanctuaries in India.

List of some major Wildlife Sanctuaries of India:

Name	State
Hazaribag Wildlife Sanctuary	Jharkhand
Mudumalai Wildlife Sanctuary	Tamil Nadu
Jaldapara Wildlife Sanctuary	West Bengal
Mount Abu Wildlife Sanctuary	Rajasthan
Anamalai Wildlife Sanctuary	Tamil Nadu
Indira Gandhi Wildlife Sanctuary	Tamil Nadu

19. Biodiversity Hotspots [BHALOTIA] [9883034569]

A biodiversity hotspot are the areas of conservation where there is strictly a minimum of 1500 species of vascular plants and a habitat that has lost its 70% cover. These are protected areas for various purposes where the wildlife, inhabitant lifestyle, and domesticated plants and animals are conserved. Tourist and research activities are allowed.

Example- The Himalayas, The Western Ghats, The North East, and The Nicobar Islands.

20. Gene Sanctuary [BHALOTIA] [9883034569]

Gene sanctuary is a conservation area reserved only for plants. India has its only gene sanctuary set up in Garo Hills of Meghalaya for the conservation of wild species of Citrus. Plans to open more such sanctuaries are underway.

21. Sacred Groves [BHALOTIA] [9883034569]

Sacred Groves are conserved areas for wildlife protected by communities due to religious beliefs. It is mostly a part of the forest where its wildlife is given complete protection.

22. Ex-situ conservation [1 Mark MCQ] [99%]****

Ex Situ Conservation means conservation of life outside their natural habitat or place of occurrence. It is the method in which part of the population or the entire endangered species is taken from its natural habitat which is threatened and breeding and maintaining of these species take place in artificial ecosystems. Such strategies include establishment of

- (a) botanical gardens,
- (b) zoos,
- (c) conservation strands and gene Bank,
- (d) pollen seed Bank,
- (e) seedling,
- (f) culture and DNA banks.

23. Botanical gardens [BHALOTIA] [9883034569]

A Botanical Garden is a collection, cultivation and display of a wide range of plants labelled with their botanical names. There are about 122 botanical gardens recorded in India. The largest botanical garden of India is the Indian Botanical garden, located in the Shibpur city of the Howrah district of the state West Bengal.

24. Zoo [BHALOTIA] [9883034569]

A zoo is a place where animals live in captivity and are put on display for people to view. The word “zoo” is short for “zoological park.”

Example:

1. Alipore Zoological Gardens (Kolkata, West Bengal)
2. Arignar Anna Zoological Park (Vandalur Zoo) (Largest and oldest Zoological Park in India) (Chennai, Tamil Nadu)
3. Nandan Kanan Zoological Park (Bhubaneswar, Odisha)

25. Gene bank: [BHALOTIA] [9883034569]

a collection of seeds, plants, tissue cultures, etc, of potentially useful species, especially species containing genes of significance to the breeding of crops.

26. Seed gene bank: [BHALOTIA] [9883034569]

A seed bank is a place where seeds are stored to preserve genetic diversity for the future.

27. Protected area network [BHALOTIA] [9883034569]

Protected areas are those areas in which human occupation or at least the exploitation of the resources are limited. There are 4 categories of the Protected Areas viz,

- (a) National Parks,
- (b) Sanctuaries,
- (c) Conservation Reserves and
- (d) Community Reserves.

28. Indigenous communities [BHALOTIA] [9883034569]

“Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them.

29. Peoples Biodiversity Register [BHALOTIA]

Peoples' Biodiversity Register is a document which contains comprehensive information on locally available Bio-resources including landscape and demography of a particular area or village.

Peoples' Biodiversity Register (PBR) is not simply a register with names of species and their distribution in a given area but it is a comprehensive data base recording peoples' traditional knowledge and insight of the status, uses, history, ongoing changes and forces driving these changes on the biological diversity resources of their own localities.

30. What is Bioprospecting? [2 marks] [30%] [BHALOTIA]

Biodiversity prospecting or bioprospecting is the systematic search for biochemical and genetic information in nature in order to develop commercially-valuable products for pharmaceutical, agricultural, cosmetic and other applications.

Bioprospecting is defined as a systematic and organized search for useful products derived from bioresources including plants, microorganisms, animals, etc., that can be developed further for commercialization and overall benefits of the society.

31. What is Biopiracy? [2 marks] [30%] [BHALOTIA]

Biopiracy is the practice of commercially exploiting naturally occurring biochemical or genetic material, especially by obtaining patents that restrict its future use, while failing to pay fair compensation to the community from which it originates.

“Biopiracy is biological theft; illegal collection of indigenous plants by corporations who patent them for their own use”

32. Distinguish between bioprospecting and biopiracy?

Bioprospecting is the search for and the commercialisation of new products that have been sourced from nature. While biopiracy is when researchers and scientists use sources from nature and traditional knowledge without permission and exploit the indigenous cultures they're getting their information from.

MCQ of 1 Mark Each

1. India has been divided into _____ Biogeographic zones [Very Imp] [90%]
 - (a) 10
 - (b) 11
 - (c) 12
2. Which of the following is a biodiversity hot spot in India? [Very Imp] [90%]
 - (a) Western Ghats
 - (b) Gangetic Plain
 - (c) Deccan Plateau
 - (d) Eastern Ghats
3. Which one of the following is not an in-situ conservation method? [Very Imp] [90%]
 - (a) Zoo
 - (b) National Parks
 - (c) Biosphere Reserves
 - (d) Sanctuaries
4. Zoos are examples for _____ [Very Imp] [90%] [BHALOTIA]
 - (a) In-situ conservation
 - (b) on-site conservation
 - (c) ex-situ conservation
5. In which Indian state is " Silent Valley National Park" located [BHALOTIA]
 - (a) Kerala
 - (b) Uttarakhand
 - (c) West Bengal
6. In which Indian state is " Sundarbans National Park " located? [Imp] [60%]
 - (a) Kerala
 - (b) Uttarakhand
 - (c) West Bengal
7. In which year was 'Project Tiger' launched? [BHALOTIA]
 - (a) 1973
 - (b) 1964
 - (c) 1998
8. Lions are found in [BHALOTIA]
 - (a) Corbett National Park
 - (b) Gir National Park
 - (c) Kaziranga National Park
9. National Park associated with rhinoceros is [BHALOTIA]
 - (a) Kaziranga
 - (b) Gir
 - (c) Corbett
10. First National Park in India is _____ [BHALOTIA]
 - (a) Jim Corbett National Park
 - (b) Gir National Park
 - (c) Sunderbans National Park

11. **Botanical gardens, Zoos, Seed bank:, DNA banks etc are examples of___ [Imp] [90%]**
(a) In-situ conservation
(b) on-site conservation
(c) **ex-situ conservation**
12. **Earth summit of Rio de Janeiro (1992) resulted in _____ [BHALOTIA]**
(a) Establishment of biosphere reserves
(b) **Conservation of biodiversity**
(c) IUCN
13. **Some species of plants and animals are extremely rare and may occur only at a few locations are called [BHALOTIA]**
(a) endemic
(b) **endangered**
(c) Endemism
14. **One orderly process of transition from one biotic community to another is called [80%]**
(a) Niche
(b) Edge effect
(c) **Ecological succession**
15. **Term 'Biodiversity' was first coined by _____[Very Imp] [80%]**
(a) Charles Darwin
(b) **Walter Rosen**
(c) E.P. Odum
16. **Biodiversity means [BHALOTIA]**
(a) Various kinds of animals
(b) Various kinds of plants
(c) **Various kinds of biota**
17. **_____ is the state of being a species being found in a single defined geographic location ***** [Very Imp] [70%]**
(a) **Endemism**
(b) endangered species
(c) habitat loss
18. **Categories of the Protected Areas are _____ [BHALOTIA]**
(a) National Parks,
(b) Sanctuaries,
(c) Conservation Reserves and Community Reserves.
(d) **All of the above**
19. **is a document which contains comprehensive information on locally available Bio-resources including landscape and demography of a particular area or village.**
(a) Peoples' Biodiversity Register
20. **_____ is the practice of commercial exploitation of biochemicals or genetic materials which occur naturally by taking patents or intellectual property. [BHALOTIA]**
(a) Biopiracy

Unit 5: Environmental Pollution

1. Environmental pollution: concepts [BHALOTIA]

Pollution

Environmental Pollution is not a new phenomenon, yet it remains one of the greatest threats to the health and well-being of humanity and one of the major environmental causes of death and morbidity.

Based on the part of the environment that is polluted, Pollution is of the following types:

1. Air Pollution
2. Water Pollution
3. Soil Pollution
4. Noise Pollution
5. Radioactive Pollution

In order to control environmental pollution, the Government of India has passed the Environment (Protection) Act, 1986 to protect and improve the quality of our environment (air, water and soil).

June 5th: World Environment Day. *****

2. Atmosphere [Important for MCQ] [1 Mark] [30%]

The atmosphere is a gaseous envelope held to earth by gravity. It extends from earth's surface to about 1000 km. The composition of the air varies from place to place. The composition is Nitrogen 78%, Oxygen 21%, Argon less than 1%, and others include carbon dioxide, water vapour, ozone, helium, methane etc in trace amount.

The main layers of atmosphere from the surface of earth upwards are troposphere, stratosphere, mesosphere and thermosphere. As far as atmospheric pollution is concerned, only troposphere and stratosphere are important. Troposphere extends to a height of about 10 km from the sea level. It contains air, water vapour, clouds etc. The pollution in this region is caused by poisonous gases, fumes and smog. Examples include photochemical smog, acid rain, global warming and greenhouse effect

Stratosphere, which is the seat of ozone is above troposphere. It extends from the height of 10 to 50 km above the sea level. It is the ozone layer at stratosphere that acts as the protective blanket of the earth from the injurious effects of the ultraviolet rays from the sun. Ozone layer depletion is the pollution that affects the stratosphere.

**3. What is Air Pollution? What are its causes & effect?
[5 Marks] [90%] [Very Important]***** [BHALOTIA]**

Air pollution

The air pollution definition says that when any physical, chemical, or biological change takes place in the air and contaminates it, then it is called air pollution. The contamination of air can be caused due to many factors such as poisonous or harmful gases, smoke, fog, smog, dust, etc. air pollution affects both plants as well as animals.

Causes of Air Pollution

Following are the important causes of air pollution:

- (a) **Burning of Fossil Fuels:** The combustion of fossil fuels emits a large amount of Sulphur dioxide. Carbon monoxide released by incomplete combustion of fossil fuels also results in air pollution.
- (b) **Automobiles:** The gases emitted from vehicles such as jeeps, trucks, cars, buses, etc. pollute the environment. These are the major sources of greenhouse gases and also result in diseases among individuals.
- (c) **Agricultural Activities:** Ammonia is one of the most hazardous gases emitted during agricultural activities. The insecticides, pesticides and fertilisers emit harmful chemicals in the atmosphere and contaminate it.
- (d) **Factories and Industries:** Factories and industries are the main source of carbon monoxide, organic compounds, hydrocarbons and chemicals. These are released into the air, degrading its quality.
- (e) **Mining Activities:** In the mining process, the minerals below the earth are extracted using large pieces of equipment. The dust and chemicals released during the process not only pollute the air, but also deteriorate the health of the workers and people living in the nearby areas.
- (f) **Domestic Sources:** The household cleaning products and paints contain toxic chemicals that are released in the air. The smell from the newly painted walls is the smell of the chemicals present in the paints. It not only pollutes the air but also affects breathing.

Effects of air Pollution on Human

- 1. Causes cancer and genetic mutations.
- 2. Causes respiratory ailments like asthma, hay fever, and other allergic diseases.
- 3. Causes cardiovascular diseases and damage to the central nervous system, resulting in premature death.
- 4. Causes immediate effects like inflammation, nausea, headache, and irritation to the eyes and nose.

4. Discuss the Effects of Air Pollution. [5 Marks] [RKB]

Effects of Air Pollution

The hazardous effects of air pollution on the environment include:

- (a) **Diseases:** Air pollution has resulted in several respiratory disorders and heart diseases among humans. The cases of lung cancer have increased in the last few decades. Children living near polluted areas are more prone to pneumonia and asthma. Many people die every year due to the direct or indirect effects of air pollution.
- (b) **Global Warming:** Due to the emission of greenhouse gases, there is an imbalance in the gaseous composition of the air. This has led to an increase in the temperature of the earth. This increase in earth's temperature is known as global warming. This has resulted in the melting of glaciers and an increase in sea levels. Many areas are submerged underwater.
- (c) **Acid Rain:** The burning of fossil fuels releases harmful gases such as nitrogen oxides and sulphur oxides in the air. The water droplets combine with these pollutants, become acidic and fall as acid rain which damages human, animal and plant life.
- (d) **Ozone Layer Depletion:** The release of chlorofluorocarbons, halons, and hydrochlorofluorocarbons in the atmosphere is the major cause of depletion of the ozone layer. The depleting ozone layer does not prevent the harmful ultraviolet rays coming from the sun and causes skin diseases and eye problems among individuals.
- (e) **Effect on Animals:** The air pollutants suspend in the water bodies and affect aquatic life. Pollution also compels the animals to leave their habitat and shift to a new place. This renders them stray and has also led to the extinction of a large number of animal species.

5. Discuss the measures to Control Air Pollution. [RKB]

Following are the measures one should adopt, to control air pollution:

- (a) **Avoid Using Vehicles:** People should avoid using vehicles for shorter distances. Rather, they should prefer public modes of transport to travel from one place to another. This not only prevents pollution, but also conserves energy.
- (b) **Energy Conservation:** A large number of fossil fuels are burnt to generate electricity. Therefore, do not forget to switch off the electrical appliances when not in use. Thus, you can save the environment at the individual level. Use of energy-efficient devices such as CFLs also controls pollution to a greater level.
- (c) **Use of Clean Energy Resources:** The use of solar, wind and geothermal energies reduce air pollution at a larger level. Various countries, including India, have implemented the use of these resources as a step towards a cleaner environment.

6. Types of air pollutants (Important for MCQ) [1 Mark]

Pollutants are classified into primary and secondary pollutants.

- (a) **Primary pollutants:** they are emitted into the atmosphere directly from the source and retains the same chemical form. Examples are carbon monoxide, Sulphur oxides, nitrogen oxides, hydrocarbons, suspended particulate matter (SPM), Respirable Suspended Particulate Matter (RSPM)
- (b) **Secondary pollutants:** they are formed by the inter mingling and reactions of primary pollutants. Examples are photochemical smog, acid rain, peroxy acetyl nitrate (PAN) etc.

7. Pollutants: Fly ash [For MCQ] [BHALOTIA]

- Fly ash is ejected mostly by thermal power plants as byproducts of coal burning operations.
- Fly ash pollutes air and water and may cause heavy metal pollution in water bodies.
- Fly ash is now being used for making **bricks** and as a **land fill**

8. Pollutants: Lead [For MCQ] [BHALOTIA]

- It is present in petrol, diesel, lead batteries, paints, hair dye products, etc.
- It can cause nervous system damage and digestive problems and, in some cases, cause cancer.

9. Major Gaseous Air Pollutants: Carbon monoxide (CO)

- Carbon monoxide (CO) is a colorless, odorless, tasteless and highly toxic gas that is slightly less dense than air. It is short-lived (stay only few months) in the atmosphere.

10. Major Gaseous Air Pollutants: Carbon dioxide (CO₂) [For MCQ] [BHALOTIA]

- Carbon dioxide is an important greenhouse gas. Burning of carbon-based fuels since the industrial revolution has led to global warming.

11. Chlorofluorocarbons (CFCs) [For MCQ] [BHALOTIA]

- Chlorofluorocarbons(CFCs) are used in refrigerators, air conditioners and aerosol sprays.

12. Ozone (O₃) [For MCQ] [BHALOTIA]

- It occurs naturally in the stratosphere. Here it absorbs harmful ultraviolet rays of the sun.
- The Montreal Protocol on Substances that Deplete the Ozone Layer (a protocol to the Vienna Convention for the Protection of the Ozone Layer)

13. Sulphur dioxide (SO₂) [For MCQ] [BHALOTIA]

- Sulfur dioxide is primarily produced for sulfuric acid manufacture. It contributes to acid rain

14. National Air Quality Index (AQI) [For MCQ]

- Launched by the Environment Ministry in April 2015.
- Initiative under 'Swachh Bharat'.

15. What is Water pollution? What are causes & effects. [5 Marks] [60%] [Important] [BHALOTIA]**

Water Pollution

Water Pollution is defined as any undesirable change in physical, chemical, or biological properties of water that may affect living beings adversely. Due to human activities, ponds, rivers, oceans, and estuaries are getting polluted in several parts of the world.

Sources of Water Pollution

Let us look at the sources of water pollution in the section below:

1. Discharge of untreated domestic sewage into rivers leads to water pollution.
2. Excessive use of fertilisers and pesticides in agriculture also causes water pollution.
3. Discharge of toxic waste from factories and refineries. etc., pollute water.
4. Oil spills that are an accidental release of oil by tankers in oceans may cause marine water pollution.
5. Inappropriate disposal of litter such as plastic bags, wrappers and bottles, lead to Water Pollution.

Effects of Water Pollution

Water Pollution affects both animals and plants and leads to an adverse impact on the aquatic ecosystem.

The major effects of Water Pollution are as follows:

1. **Water-borne diseases:** Sewage gives the maximum opportunity for the pathogenic and non-pathogenic microorganisms to grow. These pathogenic (disease-causing) microorganisms are responsible for several water-borne diseases like diarrhoea, typhoid, cholera, dysentery, jaundice, hepatitis, etc.
2. **Toxic waste material:** Toxic waste material from the industries such as heavy metals, pesticides, cyanides, and many organic and inorganic wastes are released directly into the river, lakes, and ocean, affecting the species present in these aquatic ecosystems, and ultimately affecting human health.

**16. What is Soil Pollution? What are its causes & effects.
[5 Marks] [30%] [BHALOTIA]**

Soil Pollution is the build-up of persistent toxic compounds, chemicals, salts, radioactive materials, or disease-causing agents in the soil, which have adverse effects on plant growth and animal health.

Causes of Soil Pollution

Soil Pollution is caused by the presence of man-made chemicals or other alterations in the natural soil environment. This type of contamination usually arises from the rupture of underground storage links, application of pesticides, percolation of contaminated surface water to the subsurface, fuel dumping, leaching of wastes from landfills, or direct discharge of industrial wastes to the soil.

Effects of Soil Pollution

1. Reduced soil fertility
2. Reduced nitrogen fixation
3. Release of pollutant gases
4. Release of radioactive rays causing health problems
5. Pollution of drinking water sources
6. Foul smell and release of gases
7. Waste management problems.

17. What is Noise pollution? [Important for MCQ]

Noise pollution

Noise is defined as 'unwanted or offensive sound that unreasonably intrudes into our daily activities'. Sound is measured in a unit called the decibel (dB). The permitted noise level is 125 decibels as per the Environment Protection Rules 1999.

<u>Permissible limits of sound in decibels:</u>		<u>Day Time</u>	<u>Night Time</u>
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45
D	Silence Zone	50	40

18. What is Marine pollution- What are its causes?

Marine pollution-

Marine pollution is defined as the introduction of substances to the marine environment directly or indirectly by man resulting in adverse effects such as hazardous to human health, obstruction of marine activities and lowering the quality of sea water.

Sources of Marine Pollution:

- a. Municipal waste and sewage from residences and hotels in coastal towns are directly discharged into sea.
- b. Pesticides and fertilizers from agriculture which are washed off by rain enter water courses
- c. Petroleum and oil washed off from roads normally enter sewage system and finally into seas.
- d. Ship accidents and accidental spillage at sea
- e. Off shore oil exploration also pollute the sea water to a large extent,
- f. Dry docking: All ships periodic dry docking servicing; cleaning the hulls etc.
- g. Pollution due to organic wastes; Pollution due to oil; Volcanic eruptions in the sea.
- h. Deep sea mining

19. What is hazardous waste? [2 Marks] [30%] [RKB]

What is hazardous waste?

Simply defined, a hazardous waste is a waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment. Hazardous waste is generated from many sources, ranging from industrial manufacturing process wastes to batteries and may come in many forms, including liquids, solids gases, and sludges.

Types of waste:

Non Hazardous waste: refuse, garbage, sludge, municipal trash.

Hazardous waste: solvents acid, heavy metals, pesticides, and chemical sledges

Radioactive: high and low-level radioactive waste

Mixed waste: Radioactive organic liquids, radio active heavy metals.

20. What is Solid waste management? [2 Marks] [30%]

The term solid waste management mainly refers to the complete process of collecting, treating and disposing of solid wastes. In the waste management process, the wastes are collected from different sources and are disposed of. This process includes collection, transportation, treatment, analysis and disposal of waste.

21. Types & Source of Solid Wastes [BHALOTIA]

Types & Source of Solid Wastes:

Basically solid waste can be classified into different types depending on their source:

Types of business	Typical waste generators	Types of solid wastes
Residential	Single and multifamily dwellings	Food wastes, paper, card board, plastics, textiles, leather, yard wastes, wood, glass, metals, ashes, special wastes
Industrial	Light and heavy manufacturing, fabrication, construction sites, power and chemical plants.	Housekeeping wastes, packaging, food wastes, construction and demolition materials, hazardous wastes, ashes, special wastes.

Garbage: many broad categories of garbage are:

- a. **Organic waste:** kitchen waste, vegetables, flowers, leaves, fruits.
- a. **Toxic waste:** old medicines, paints, chemicals, bulbs, spray cans, fertilizer and pesticide containers, batteries, shoe polish.
- b. **Recyclable:** paper, glass, metals, plastics.
- c. **Hospital waste** such as cloth with blood

22. Methods of Solid Wastes Disposal [BHALOTIA]

Sanitary Land Filling:

The sanitary landfill is a method of disposing waste on land without disturbing the environment and public health by efficiently utilizing engineering skills to confine them in the smallest practical area possible, before reducing the volume by covering with a layer of earth to ensure the least exposure to the air.

Incineration:

Incineration is a waste treatment process that involves the combustion of substances contained in waste materials. Industrial plants for waste incineration are commonly referred to as waste-to-energy facilities. Incineration and other high-temperature waste treatment systems are described as "thermal treatment"

Composting:

Composting is a biological process in which micro-organisms, mainly fungi and bacteria, convert degradable organic waste into humus like substance. This finished product, which looks like soil, is high in carbon and nitrogen and is an excellent medium for growing plants.

Pyrolysis:

Pyrolysis is a form of incineration that chemically decomposes organic materials by heat in the absence of oxygen. Pyrolysis typically occurs under pressure and at operating temperatures above 430 °C (800 °F).

23. Control measures of Municipal, biomedical and e-waste:

(i) Collection of Solid Wastes:

- (a) Community storage point:
- (b) Kerbside Collection:
- (c) Block Collection:

(ii) Disposal of Solid Wastes:

- (1) Salvage or Manual Component Separation:
- (2) Compaction or Mechanical Volume Reduction:
- (3) Incineration or Thermal Volume Reduction:
- (4) Open Dumping:
- (5) Sanitary Landfilling or Controlled Tipping:
- (6) Pyrolysis or Destructive Distillation:
- (7) Land farming:
- (8) Composting or Biodegradation:

(iii) Waste Utilisation:

- (1) **Reuse** i.e. a given material has multiple uses.
- (2) **Reclamation** i.e. a component of the waste is recovered for use in a manner different from its original use.
- (3) **Recycling** i.e. isolating the material from which a given product was made and reintroducing it into the production cycle for production of the same product.

**24. What do you mean by Biomedical waste? [2 Marks]
[30%] [BHALOTIA]**

Biomedical waste is any waste containing infectious or potentially infectious materials. These wastes are generated during the diagnosis, treatment, and immunization of humans and animals.

Biomedical wastes can be in both solid and liquid forms. Examples of biomedical wastes include:

- (a) Waste sharps such as needles, lancets, syringes, scalpels, and broken glass
- (b) Human tissues or identifiable body parts (as a result of amputation)
- (c) Animal tissues and waste from veterinary hospitals
- (d) Used bandage, dressings, gloves, and other medical supplies
- (e) Liquid waste from infected areas
- (f) Laboratory wastes

**25. What are the Control measures of e-waste? [2 Marks]
[30%] [BHALOTIA]**

E-Waste:

The term electronic waste refers to any electronic device that is no longer wanted or has become obsolete. Electronics classified as e-waste can either be in perfect working condition or be unusable.

Management

- (1) Donate or Sell Working Electronics
- (2) Use Your Old Mobile Phone as a GPS Device
- (3) Recycle via a Retailer
- (4) Check E-Cycling Centers in Your State
- (5) Organize Your Electronics
- (6) Know Your State's Laws About Battery Disposal
- (7) Store Your Data Online
- (8) Buy Energy Star Rated Appliances
- (9) Educate Yourself on the Materials Used in Electronics

26. What is Climate change? [2 Marks] [very imp] [80%]

Climate change refers to long-term shifts in temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. But since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels like coal, oil and gas.

Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the Earth, trapping the sun's heat and raising temperatures.

27. What is Global warming? [2 Marks] [very imp] [80%]

"Global warming is a gradual increase in the earth's temperature generally due to the greenhouse effect caused by increased levels of carbon dioxide, CFCs, and other pollutants."

Global warming is the phenomenon of a gradual increase in the temperature near the earth's surface. This phenomenon has been observed over the past one or two centuries. This change has disturbed the climatic pattern of the earth.

Global warming is the long-term warming of the planet's overall temperature. Though this warming trend has been going on for a long time, its pace has significantly increased in the last hundred years due to the burning of fossil fuels. As the human population has increased, so has the volume of fossil fuels burned.

28. What is Global warming? What are the Causes of Global Warming? [5 Marks] [Very Imp] [90%]*****

Global warming is the phenomenon of a gradual increase in the temperature near the earth's surface. This phenomenon has been observed over the past one or two centuries. This change has disturbed the climatic pattern of the earth.

Following are the major causes of global warming:

Man-made Causes of Global Warming

- (a) **Deforestation:** Forests are being depleted for many domestic and commercial purposes. This has led to an environmental imbalance, thereby giving rise to global warming.
- (b) **Use of Vehicles:** Vehicles burn fossil fuels which emit a large amount of carbon dioxide and other toxins into the atmosphere resulting in a temperature increase.
- (c) **Chlorofluorocarbon:** With the excessive use of air conditioners and refrigerators, humans have been adding CFCs into the environment which affects the atmospheric ozone layer.
- (d) **Industrial Development:** With the advent of industrialization, the temperature of the earth has been increasing rapidly. The harmful emissions from the factories add to the increasing temperature of the earth.
- (e) **Agriculture:** Various farming activities produce carbon dioxide and methane gas. These add to the greenhouse gases in the atmosphere and increase the temperature of the earth.
- (f) **Overpopulation:** An increase in population means more people breathing. This leads to an increase in the level of carbon dioxide, the primary gas causing global warming, in the atmosphere.

Natural Causes of Global Warming

- (a) **Volcanoes:** Volcanoes are one of the largest natural contributors to global warming. The ash and smoke emitted during volcanic eruptions goes out into the atmosphere and affects the climate.
- (b) **Water Vapour:** Water vapour is a kind of greenhouse gas. Due to the increase in the earth's temperature, more water gets evaporated from the water bodies and stays in the atmosphere adding to global warming.
- (c) **Melting Permafrost:** Permafrost is frozen soil that has environmental gases trapped in it for several years and is present below Earth's surface. It is present in glaciers. As the permafrost melts, it releases the gases back into the atmosphere, increasing Earth's temperature.
- (d) **Forest Blazes:** Forest blazes or forest fires emit a large amount of carbon-containing smoke. These gases are released into the atmosphere and increase the earth's temperature resulting in global warming.

29. Discuss the Effects of Global Warming. [5 M] [30%]

Effects of Global Warming

Following are the major effects of global warming:

- (a) **Rise in Temperature:** Global warming has led to an incredible increase in earth's temperature. Since 1880, the earth's temperature has increased by ~1 degrees. This has resulted in an increase in the melting of glaciers, which have led to an increase in the sea level. This could have devastating effects on coastal regions.
- (b) **Threats to the Ecosystem:** Global warming has affected the coral reefs that can lead to the loss of plant and animal lives. Increase in global temperatures has made the fragility of coral reefs even worse.
- (c) **Climate Change:** Global warming has led to a change in climatic conditions. There are droughts at some places and floods at some. This climatic imbalance is the result of global warming.
- (d) **Spread of Diseases:** Global warming leads to a change in the patterns of heat and humidity. This has led to the movement of mosquitoes that carry and spread diseases.
- (e) **High Mortality Rates:** Due to an increase in floods, tsunamis and other natural calamities, the average death toll usually increases. Also, such events can bring about the spread of diseases that can hamper human life.
- (f) **Loss of Natural Habitats:** A global shift in the climate leads to the loss of habitats of several plants and animals. In this case, the animals need to migrate from their natural habitat and many of them even become extinct. This is yet another major impact of global warming on biodiversity.

30. What is the Ozone Layer? [1 Mark MCQ] [30%]****

The ozone layer is the layer present in the Stratosphere. It absorbs the harmful ultraviolet rays that come from the sun. It has the potential to absorb around 97-99% of the harmful ultraviolet radiations coming from the sun that can damage life on earth. If the ozone layer was absent, millions of people would develop skin diseases and may have weakened immune systems.

The ozone layer is important for the earth because it protects the earth from the harmful ultraviolet radiation. This radiation comes from the sun and is harmful to the earth's surface.

However, scientists have discovered a hole in the ozone layer over Antarctica. This has focussed their concern on various environmental issues and steps to control them. The main reasons for the ozone hole are chlorofluorocarbons, carbon tetrachloride, methyl bromide and hydrochlorofluorocarbons.

31. What is Ozone layer depletion? [2 Marks] [30%]****

“Ozone layer depletion is the gradual thinning of the earth’s ozone layer in the upper atmosphere caused due to the release of chemical compounds containing gaseous bromine or chlorine from industries or other human activities.”

Humans will be directly exposed to the harmful ultraviolet radiation of the sun due to the depletion of the ozone layer. This might result in serious health issues among humans, such as skin diseases, cancer, sunburns, cataract, quick ageing and weak immune system.

**32. What are the causes of Ozone Layer Depletion?
[5 Marks] [30%] [BHALOTIA]**

Ozone layer depletion is a major concern and is associated with a number of factors. The main causes responsible for the depletion of the ozone layer are listed below:

- (a) **Chlorofluorocarbons:** Chlorofluorocarbons or CFCs are the main cause of ozone layer depletion. These are released by solvents, spray aerosols, refrigerators, air-conditioners, etc.
- (b) **Unregulated Rocket Launches:** Researches say that the unregulated launching of rockets results in much more depletion of the ozone layer than the CFCs do. If not controlled, this might result in a huge loss of the ozone layer by the year 2050.
- (c) **Nitrogenous Compounds:** The nitrogenous compounds such as NO₂, NO, N₂O are highly responsible for the depletion of the ozone layer.
- (d) **Natural Causes:** The ozone layer has been found to be depleted by certain natural processes such as Sun-spots and stratospheric winds. But it does not cause more than 1-2% of the ozone layer depletion. The volcanic eruptions are also responsible for the depletion of the ozone layer.

33. Discuss the Effects of Ozone Layer Depletion?

- (a) **Effects on Human Health:** Humans will be directly exposed to the harmful ultraviolet radiation of the sun due to the depletion of the ozone layer. This might result in serious health issues among humans, such as skin diseases, cancer, sunburns, cataract, quick ageing and weak immune system.
- (b) **Effects on Animals:** Direct exposure to ultraviolet radiations leads to skin and eye cancer in animals.
- (c) **Effects on the Environment:** Strong ultraviolet rays may lead to minimal growth, flowering and photosynthesis in plants. The forests also have to bear the harmful effects of the ultraviolet rays.
- (d) **Effects on Marine Life:** Planktons are greatly affected by the exposure to harmful ultraviolet rays. These are higher in the aquatic food chain. If the planktons are destroyed, the organisms present in the food chain are also affected.

34. What is Acid rain? [2 Marks] [80 %][BHALOTIA]**

Acid rain, or acid deposition, is a broad term that includes any form of precipitation with acidic components, such as sulfuric or nitric acid that fall to the ground from the atmosphere in wet or dry forms. This can include rain, snow, fog, hail or even dust that is acidic.

Acid rain results when sulfur dioxide (SO₂) and nitrogen oxides (NO_x) are emitted into the atmosphere and transported by wind and air currents. The SO₂ and NO_x react with water, oxygen and other chemicals to form sulfuric and nitric acids. These then mix with water and other materials before falling to the ground.

Acidity and alkalinity are measured using a pH scale for which 7.0 is neutral. The lower a substance's pH (less than 7), the more acidic it is; the higher a substance's pH (greater than 7), the more alkaline it is. Acid rain usually has a pH between 4.2 and 4.4.

35. Discuss the impact of Acid Rain? [BHALOTIA]

1. Acid Rain Can Cause Health Problems in People

Air pollution like sulfur dioxide and nitrogen oxides can cause respiratory diseases, or can make these diseases worse. Respiratory diseases like asthma or chronic bronchitis make it hard for people to breathe.

2. Acid Rain Harms Forests

Acid rain can be extremely harmful to forests. Acid rain that seeps into the ground can dissolve nutrients, such as magnesium and calcium. Acid rain also causes aluminum to be released into the soil, which makes it difficult for trees to take up water.

3. Acid Rain Damages Lakes and Streams

Increase in acidity and aluminum levels can be deadly to aquatic wildlife, including phytoplankton, mayflies, rainbow trout, small mouth bass, frogs, spotted salamanders, crayfish, and other creatures that are part of the food web.

4. Acid Rain Damages Buildings and Objects

Acid rain can also have a damaging effect on many objects, including buildings, statues, monuments, and cars.

36. What is Green House effect? [1 Mark MCQ] [95%]

The greenhouse effect is the way in which heat is trapped close to Earth's surface by "greenhouse gases." These heat-trapping gases can be thought of as a blanket wrapped around Earth, keeping the planet toastier than it would be without them. **Greenhouse gases include carbon dioxide, methane, nitrous oxides, and water vapor.**

MCQ of 1 Mark Each

1. The unit of measurement of intensity of sound is in _____ [Important] [80%]
 - (a) **Decibels**
 - (b) Parsec
 - (c) Candela
2. Acid rain mainly result from _____ [Important] [80%] [BHALOTIA]
 - (a) **Sulfur dioxide**
 - (b) Carbon dioxide
 - (c) Carbon monoxide
3. Ozone depletion is mostly caused by _____ [Important] [80%] [BHALOTIA]
 - (a) CO₂
 - (b) CCL
 - (c) **CFCs**
4. Global warming is caused by _____ [Important] [80%] [BHALOTIA]
 - (a) **GHGs**
 - (b) CFCs
 - (c) NO₂
5. Soil pollution is caused by _____ [BHALOTIA]
 - (a) Aerosol
 - (b) Ozone
 - (c) **Acid rain**
6. The heating of earth's atmosphere due to trapped radiation is known as _____
 - (a) Global warming
 - (b) Thermal effect
 - (c) **Green House Effect**
7. BOD stands for _____ [Important] [80%] [BHALOTIA]
 - (a) Biological Oxygen Decrease
 - (b) Biotic Oxygen Demand
 - (c) **Biological Oxygen Demand**
8. One of the secondary air pollutant is _____ [Important] [80%] [BHALOTIA]
 - (a) CO₂
 - (b) NO_x
 - (c) **PAN**
9. The most toxic air pollutant from petrol car is _____ [BHALOTIA]
 - (a) CO₂
 - (b) **SO₂**
 - (c) Hydrocarbon.
10. Suspended particulate matter (SPM) in air is measured by _____ [Imp] [80%]
 - (a) **High Volume Sampler**
 - (b) Hygrometer
 - (c) Barometer

11. BOD is used to test _____ [Important] [80%] [BHALOTIA]
(a) Soil
(b) Water
(c) Air
12. The main pollutant in vehicle emission is _____ [Important] [80%] [BHALOTIA]
(a) Carbon monoxide (CO)
(b) Carbon dioxide: (CO₂)
(c) Sulphur Oxides: (SO₂)
13. The Permissible limit of arsenic in water is _____ [BHALOTIA]____
(a) 0.05 mg/L ;
(b) 0.005 mg /L ;
(c) 0.5 mg /L
14. The maximum permissible decibel limit of sound in and around silence zone (like hospital, school etc.) in day time is _____
(a) 65 decibel
(b) 50 decibel
(c) 55 decibel
15. The permitted noise level is _____ as per the Environment Protection Rules 1999.
(a) 100 decibel
(b) 125 decibel
(c) 150 decibel
16. The principal metal pollutant from automobile exhaust is _____ [BHALOTIA]
(a) Mercury
(b) Lead
(c) Cadmium
17. A chronic disease called 'Silicosis' involves. _____
(a) Heart
(b) Lung
(c) Liver
18. Which of the following bacteria can fix nitrogen? _____
(a) Nitrococcus
(b) Nitrobacter
(c) Azotobacter
19. The Seismograph is used to measure the intensity of _____ [BHALOTIA]
(a) Sea wave
(b) Cyclone
(c) Earthquake
20. Bharat Stage-VI is related to which of the following? [Important] [80%]
(a) Solid waste management
(b) Automobiles emission
(c) Noise pollution.
21. Chernobyl pollution is associated with _____
(a) Water pollution
(b) Radioactive pollution
(c) Noise pollution

22. **Activated Sludge is associated with _____** [BHALOTIA]
(a) Air Purification process
(b) **Waste water treatment**
(c) Solid waste treatment
23. **Chemical oxygen demand [COD] is measured for _____**
(a) **water sample**
(b) soil sample
(c) air sample
24. **RSPM' is _____** [Important] [80%]
(a) Respirable Sophisticate Particulate Matter
(b) **Respirable Suspended Particulate Matter**
(c) Respirable Surrounding Particulate Matter
25. **'IUCN' stands for**
(a) Inter State Unity of Culture and Nature
(b) International Union for conservation of Natural Body
(c) **International Union for the Conservation of Nature and Natural Resources.**
26. **Name a process that can conserve fresh water resource of the Earth? _____**
(a) **Rainwater Harvesting**
(b) Desalinization
(c) Ground water
27. _____ **the phenomenon of increasing average air temperatures near the surface of Earth over the past one to two centuries.*****
(a) **Global warming**
(b) Climate change
(c) Ozone layer depletion
28. **Ozone layer depletion occurs in******* [BHALOTIA]
(a) **Stratosphere**
(b) Troposphere
(c) Ionosphere
29. **Global warming is caused by*******
(a) Acid rain
(b) Ozone depletion
(c) **Greenhouse gases**
30. **The lowest layer of atmosphere is**** [BHALOTIA]
(a) Ionosphere
(b) **Troposphere**
(c) Stratosphere
31. **Which one of the following is a greenhouse gas ?*******
(a) Nitrogen
(b) Oxygen
(c) **Methane**
32. **First international conference on environment was held in****** [BHALOTIA]
(a) New Delhi
(b) New York
(c) **Stockholm**

Short Qns of 2 Mark each for last time revision

1. Define Environmental Studies: [Important] [80 %] [BHALOTIA]

The word environment is derived from the French word “environ” meaning surroundings. Environment literally means Surrounding in which we are living.

2. Why Environmental studies is called Multidisciplinary nature? [Important] [80 %]

Environmental studies is multi-disciplinary because it comprises various branches of studies like chemistry, physics, medical science, life science, agriculture and public health.

3. What is sustainable development? [Very Important] [98 %] [BHALOTIA]

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

4. What is Low carbon lifestyle? [Important] [80 %][BHALOTIA]

A low-carbon economy (LCE) is a concept for a desirable economy which has relatively low greenhouse gas (GHG) emissions per person. GHG emissions due to human activity are the dominant cause of observed climate change since the mid-20th century.

5. What is Mission LiFE? [Important] [80 %] [BHALOTIA]

Mission LiFE (Lifestyle for Environment) is a global mass movement led by India to nudge individual and community behavioural change in order to reduce emissions, protect the environment and conserve resources.

6. What is Ecology? [Very Important] [98 %][BHALOTIA]

Ecology is the study of organisms, the environment and how the organisms interact with each other and their environment.

7. What is Ecosystem? [Very Important] [98 %][BHALOTIA]

An ecosystem is a geographic area where plants, animals, and other organisms, as well as weather and landscape, work together to form a bubble of life. Ecosystems contain biotic or living, parts, as well as abiotic factors, or nonliving parts.

8. What are the two main components of Ecosystem. [Important] [70 %] [BHALOTIA]

The ecosystem includes 2 main components for a working ecosystem:

- (a) Biotic Component
- (b) Abiotic Component

9. What do you mean by Abiotic components? [Very Important] [80 %][BHALOTIA]

Abiotic components are non-living chemical and physical factors of an ecosystem. A few examples of abiotic components include sunlight, soil, air, moisture minerals and more.

10. What do you mean by Biotic components? [Very Important] [80 %] [BHALOTIA]

Biotic components are living factors of an ecosystem. A few examples of biotic components include bacteria, animals, birds, fungi, plants, etc.

11. Define decomposer and name two decomposers. [Very Important] [98 %][BHALOTIA]

Decomposer organisms break down dead matter and gain their nutrition, and the decomposed material returns back to the land. Example: fungi and bacteria.

12. Define a producer-(in ecology) giving an example. [Very Important] [80 %][BHALOTIA]

A producer is an autotrophic organism which is able to manufacture food from abiotic elements, carbon-di-oxide, water, nitrogen etc. e.g. any green plant.

13. What is Food chain? [Very Important] [99 %][BHALOTIA]

A food chain refers to the order of events in an ecosystem, where one living organism eats another organism, and later that organism is consumed by another larger organism. The flow of nutrients and energy from one organism to another at different trophic levels forms a food chain.

Grass (Producer) —Goat (Primary Consumer) — Man (Secondary consumer)

14. What is Food web? [Very Important] [90 %][BHALOTIA]

Several interconnected food chains form a food web. A food web is similar to a food chain but the food web is comparatively larger than a food chain. Occasionally, a single organism is consumed by many predators or it consumes several other organisms. Due to this, many trophic levels get interconnected. The food chain fails to showcase the flow of energy in the right way.

15. What is biomagnification? [Very Important] [80 %][BHALOTIA]

Progressive accumulation over time of toxic components of pesticides metals, and other chemicals through food chain.

16. What is Eco-tone? [Very Important] [80 %][BHALOTIA]

An ecotone is a zone of junction or a transition area between two biomes (diverse ecosystems). (Important)****

17. What is Edge Effect? [Very Important] [80 %][BHALOTIA]

Edge effect refers to the changes in population or community structures that occur at the boundary of two habitats (ecotone). (Important)

18. What is Ecological Niche? [Important] [60 %] [BHALOTIA]

Ecological niche can be defined as the range of resources and conditions allowing the species to maintain a viable population. Theoretically, if two species have the same niche, one species will exclude the other. The corollary is that the niches of coexisting species must differ.

19. What is an Ecological Pyramid? [Important] [60 %] [BHALOTIA]

Ecological Pyramid are the graphical representations of the number, energy, and biomass of the trophic level of an ecosystem.

20. What is Ecological succession? [Important] [80 %] [BHALOTIA]

Ecological succession is the process by which natural communities replace (or “succeed”) one another over time. For example, when an old farm field is abandoned and left alone for many years, it gradually becomes a meadow, then a few bushes grow, and eventually, trees completely fill in the field, producing a forest.

21. What is Renewable Resources of energy? Give examples [Very Important] [90 %]

The resources which cannot be exhausted even after continuous utilisation are termed renewable resources. Examples of renewable resources are the sun, wind, and tidal energy

22. What is non-renewable Resources of energy? Give examples [Very Important] [90 %]

The resources which cannot be immediately replaced once they are depleted are called non-renewable resources. Examples of non-renewable resources include fossil fuels, such as coal, petroleum, natural gas and rare minerals, nuclear energy etc.

23. What is Fossil fuel? [Very Important] [90 %] [BHALOTIA]

Fossil fuels are made from decomposing plants and animals. These fuels are found in the Earth's crust and contain carbon and hydrogen, which can be burned for energy. Coal, oil, and natural gas are examples of fossil fuels.

24. What is Land degradation? [Important] [80 %] [BHALOTIA]

Land degradation: The deterioration or loss of the productive capacity of the soils for present and future is called Land degradation.

25. What are the Causes of Land Degradation? [Important] [80 %] [BHALOTIA]

- (a) Deforestation:
- (b) Overgrazing:
- (c) Agricultural practices:
- (d) Industrialization:
- (e) Urbanization:

26. State the impact of land degradation on agriculture [BHALOTIA]

The impacts of land degradation are:-

- (i) Carrying capacity of land is reduced substantially
- (ii) Productivity and total production of crop also decreased.

27. What is Soil erosion? [Important] [80 %] [BHALOTIA]

Soil erosion is a process in which the top fertile layer of soil is lost. Due to soil erosion, the soil becomes less fertile. The top layer of soil is very light which is easily carried away by wind and water. The removal of top soil by the natural forces is known as soil erosion.

28. What is Desertification? [Important] [70 %] [BHALOTIA]

Desertification is the degradation process by which a fertile land changes itself into a desert by losing its flora and fauna, this can be caused by drought, deforestation, climate change, human activities or improper agriculture. Desertification is a process of degradation of the land.

29. What is Deforestation? [Important] [80 %] [BHALOTIA]

Deforestation is when humans remove or thin forests for lumber or to use the land where the trees stood for crops, grazing, extraction (mining, oil, or gas), or development as the population increases and people migrate.

30. What are the causes for Deforestation: [BHALOTIA]

- (a) Agriculture:
- (b) Commercial logging:
- (c) Mining:
- (d) Increase in population:
- (e) Urbanization and industrialization:

31. What is afforestation ? [Important] [60 %] [BHALOTIA]

To maintain the ecological balance, to increase forest areas when we plant trees in different areas it is called afforestation.

32. Define biogeochemical cycle. [Important] [60 %] [BHALOTIA]

Biogeochemical cycles mainly refer to the movement of nutrients and other elements between biotic and abiotic factors.” The term biogeochemical is derived from “bio” meaning biosphere, “geo” meaning the geological components and “chemical” meaning the elements that move through a cycle.

33. What is biogas? [Important] [80 %] [BHALOTIA]

Biogas or 'gobar gas' is a renewable source of energy. In a traditional 'gobar gas' plant, cow-dung is put in a closed vessel where anaerobic digestion takes place with the help of methanogenic bacteria. Methane gas is produced in this system which is used as fuel.

34. What is Natural resource accounting? [Important] [60 %] [BHALOTIA]

Natural Resource Accounting is a process of estimating the value of natural resource depletion and environment degradation due to economic activities.

35. What is biomass? [BHALOTIA]

Biomass is the mass of living biological organisms in a given area or ecosystem at a given time. Biomass can refer to species biomass, which is the mass of one or more species, or to community biomass, which is the mass of all species in the community. It can include microorganisms, plants or animals.

36. What is Conventional Sources of Energy? Give example. [Important] [80 %] [BHALOTIA]

Conventional Sources of Energy are also known as non-renewable sources of energy and are available in limited quantity apart from hydro-electric power. Further, it is classified under commercial and non-commercial energy. Example: Coal, Petroleum, Electricity, Fire wood, Dried dung etc

37. What is Non-Conventional Sources of Energy? Give example. [Important] [80 %]

Non-conventional sources are also known as renewable sources of energy. Examples of non-conventional sources of energy include solar energy, bioenergy, tidal energy and wind energy.

38. What is Green Energy? [Very Important] [99 %] [BHALOTIA]

Green energy is energy that can be produced using a method, and from a source, that causes no harm to the natural environment. As a source of energy, green energy often comes from renewable energy technologies such as solar energy, wind power, geothermal energy, biomass and hydroelectric power.

39. What is Biodiversity? [Very Important] [99 %] [BHALOTIA]

Biodiversity, also called biological diversity, the variety of life found in a place on Earth or, often, the total variety of life on Earth. A common measure of this variety, called species richness, is the count of species in an area.

40. What is In Situ Conservation? [Very Important] [99 %] [BHALOTIA]

In Situ Conservation refers to the preservation and protection of the species in their natural habitat. Different methods of In-situ conservation include biosphere reserves, national parks, wildlife sanctuaries, etc.

41. What is Ex Situ Conservation? [Very Important] [99 %] [BHALOTIA]

Ex Situ Conservation means conservation of life outside their natural habitat or place of occurrence. Such strategies include establishment of

- (a) botanical gardens,
- (b) zoos,
- (c) culture and DNA banks.

42. What is wild life sanctuary ? [BHALOTIA]

Wild life includes plants and animals that live on the land and in the watery areas of the earth. Wildlife is important to human life for their existence on the earth. To preserve them from illegal hunting and poaching they should be preserved and it is called wildlife sanctuary.

43. What is Protected area network? [Important] [60 %] [BHALOTIA]

Protected areas are those areas in which human occupation or at least the exploitation of the resources are limited. There are 4 categories of the Protected Areas viz, National Parks, Sanctuaries, Conservation Reserves and Community Reserves.

44. What is Indigenous communities? [Important] [60 %] [BHALOTIA]

“Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them.

45. What is Peoples' Biodiversity Register (PBR)? [BHALOTIA]

Peoples' Biodiversity Register (PBR) is not simply a register with names of species and their distribution in a given area but it is a comprehensive data base recording peoples' traditional knowledge and insight of the status, uses, history, ongoing changes and forces driving these changes on the biological diversity resources of their own localities.

46. What is Bioprospecting? [BHALOTIA]

Bioprospecting is defined as a systematic and organized search for useful products derived from bioresources including plants, microorganisms, animals, etc., that can be developed further for commercialization and overall benefits of the society.

47. What is Biopiracy? [Important] [60 %][BHALOTIA]

Biopiracy is the practice of commercially exploiting naturally occurring biochemical or genetic material, especially by obtaining patents that restrict its future use, while failing to pay fair compensation to the community from which it originates.

48. What is Air Pollution? [Important] [60 %][BHALOTIA]

The air pollution definition says that when any physical, chemical, or biological change takes place in the air and contaminates it, then it is called air pollution. The contamination of air can be caused due to many factors such as poisonous or harmful gases, smoke, fog, smog, dust, etc. air pollution affects both plants as well as animals.

49. Name three major air pollutants with their effects. [Important] [60 %][BHALOTIA]

Sulphur dioxide - irritation of eyes, burning sensation in respiratory tract, bronchitis, lung cancer.
Oxides of Nitrogen - irritation in the fibers of lung. Pulmonary diseases.
Carbon monoxide - reduces oxygen carrying capacity of blood cells, vomiting, drowsiness.

50. What are the causes of Air Pollution? [Important] [60 %][BHALOTIA]

- (a) Burning of Fossil Fuels:
- (b) Automobiles
- (c) Agricultural Activities:
- (d) Factories and Industries
- (e) Mining Activities
- (f) Domestic Sources:

51. What is Water pollution? [Important] [60 %][BHALOTIA]

Water Pollution is defined as any undesirable change in physical, chemical, or biological properties of water that may affect living beings adversely. Due to human activities, ponds, rivers, oceans, and estuaries are getting polluted in several parts of the world.

52. What are the Causes of groundwater pollution? [Important] [60 %][BHALOTIA]

- (a) Naturally-occurring (geogenic)
- (b) On-site sanitation systems
- (c) Sewage and sewage sludge
- (d) Fertilizers and pesticides
- (e) Commercial and industrial leaks

53. What is Soil Pollution? [Important] [60 %][BHALOTIA]

Soil Pollution is the build-up of persistent toxic compounds, chemicals, salts, radioactive materials, or disease-causing agents in the soil, which have adverse effects on plant growth and animal health.

54. What is hazardous waste? [Important] [30 %][BHALOTIA]

Simply defined, a hazardous waste is a waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment. Hazardous waste is generated from many sources, ranging from industrial manufacturing process wastes to batteries and may come in many forms, including liquids, solids gases, and sludges.

55. What is Solid waste management? [Important] [60 %][BHALOTIA]

The term solid waste management mainly refers to the complete process of collecting, treating and disposing of solid wastes. In the waste management process, the wastes are collected from different sources and are disposed of. This process includes collection, transportation, treatment, analysis and disposal of waste.

56. Methods of Solid Wastes Disposal: [Important] [60 %][BHALOTIA]

- (a) Sanitary Land Filling:
- (b) Incineration:
- (c) Composting:

57. Methods of Waste Utilisation (RRR) [Important] [60 %][BHALOTIA]

- (a) Reuse
- (b) Reclamation
- (c) Recycling

58. What do you mean by Biomedical waste? [Important] [30 %][BHALOTIA]

Biomedical waste is any waste containing infectious or potentially infectious materials. These wastes are generated during the diagnosis, treatment, and immunization of humans and animals.

59. What is Climate change? [Important] [80 %] [BHALOTIA]

Climate change refers to long-term shifts in temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions.

60. What is Global warming? [Important] [80 %] [BHALOTIA]

Global warming is the phenomenon of a gradual increase in the temperature near the earth's surface. This phenomenon has been observed over the past one or two centuries. This change has disturbed the climatic pattern of the earth.

61. Mention the function for the Ozone layer of the Stratosphere. [BHALOTIA]

The ozone layer is the layer present in the Stratosphere. It absorbs the harmful ultraviolet rays that come from the sun. It has the potential to absorb around 97-99% of the harmful ultraviolet radiations coming from the sun that can damage life on earth. If the ozone layer was absent, millions of people would develop skin diseases and may have weakened immune systems.

62. What is Ozone layer depletion? [Important] [80 %] [BHALOTIA]

"Ozone layer depletion is the gradual thinning of the earth's ozone layer in the upper atmosphere caused due to the release of chemical compounds containing gaseous bromine or chlorine from industries or other human activities."

63. What are the causes of Ozone Layer Depletion? [BHALOTIA]

- (a) Chlorofluorocarbons (CFCs)
- (b) Unregulated Rocket Launches:
- (c) Nitrogenous Compounds:
- (d) Natural Causes:

64. What is Acid rain? [BHALOTIA]

Acid rain, or acid deposition, is a broad term that includes any form of precipitation with acidic components, such as sulfuric or nitric acid that fall to the ground from the atmosphere in wet or dry forms. This can include rain, snow, fog, hail or even dust that is acidic.

65. What is Green House effect? [BHALOTIA]

The greenhouse effect is the way in which heat is trapped close to Earth's surface by "greenhouse gases." These heat-trapping gases can be thought of as a blanket wrapped around Earth, keeping the planet toastier than it would be without them. Greenhouse gases include carbon dioxide, methane, nitrous oxides, and water vapor.

66. What is BOD (biological oxygen demand)? [BHALOTIA]

The dissolved oxygen that microorganisms like bacteria need to oxidize, and organic substances in water, are referred to as BOD.

- (a) It is a metric for determining the quality of water.
- (b) Biological oxygen demand is significant for water quality.

67. What is COD ? [BHALOTIA]

Chemical oxygen demand (COD) is a measure of the capacity of water to consume oxygen during the decomposition of organic matter and the oxidation of inorganic chemicals such as Ammonia and nitrite.

68. State the importance of biodiversity. [BHALOTIA]

- (i) It gives us a wide range and richness of the flora and fauna.
- (ii) The qualitative and quantitative difference in the living organisms

69. What are the major pollutants emit from automobile? [BHALOTIA]

The major pollutants which are emitted from automobiles are — CO, NO, and also CO₂.

70. State some harmful effects of noise pollution. [BHALOTIA]

Noise pollution may have harmful effects on both our body and mind i.e. such effects may be physiological and psychological —

- (i) It may damage our ear (ii) We may feel irritated and our sleeping may be disturbed.

71. Why use of chlorofluorocarbons should be banned? [BHALOTIA]

- (i) This class of compounds plays a major role in destroying the atmospheric ozone layer.
- (ii) These compounds also act as greenhouse gases in troposphere.

72. What is 'biodegradation' ? [BHALOTIA]

The Earth is composed of various substances which may be of two types (a) biodegradable and (b) non-biodegradable 'Biodegradation' means breakdown of substances by bacterial activity and these substances are more ecofriendly as compared to non-biodegradable substances.

73. What is Biofertilizer ? [BHALOTIA]

Biofertilizer is a fertilizer which is manufactured from biotic substances i.e., from plants and animals substances.

74. Name common water pollutants. [BHALOTIA]

- (a) Industrial Effluents.
- (b) Household waste water
- (c) Drainage of waste water from hospitals, etc.
- (d) Immersion of gods goddess and bathing of catties, etc.
- (e) Washing of clothes.

75. What is a Biome ? [BHALOTIA]

Biome is a plant and animal community that covers a large ecological region or geographical area having natural assemblages of plant and animals, e.g. Tundra Biome, Tropical Rainforest Biome, Temperate Biome, Coniferous Biome etc.

76. What is Agenda 21? [BHALOTIA]

Agenda 21 represents the very first global action plan intended to promote sustainable development. It reflects the development priorities of 178 developing and donor countries.

77. What is wetland? Name two important wetlands in India. [BHALOTIA]

Wetlands are those areas where the soil is covered with water or can be present near the ground throughout the year. It supports both terrestrial and aquatic species. They vary widely depending on the climate, soil, vegetation, hydrology, chemistry, and human disturbance.

Two wetlands of India are -i) Sundarban in West Bengal and ii) Chilka Lake estuary.

78. Give two important reasons for the conservation of forests. [BHALOTIA]

For soil conservation and conservation of water in soil, (ii) To maintain ecological balance - rainfall and climate, (iii) For food, fodder and fuel; For role in national economy providing employment (e.g. social forestry)

79. What is 'Green Bench'? [BHALOTIA]

Green Bench is formed in different High courts of India under the supervision of supreme Court. The main purpose was to monitor environmental problems in the different states and (ii) to solve any petition related to environmental issues from industry, any organisation.

80. Explain why nature conservation is necessary? [BHALOTIA]

Conservation is necessary because —

- (i) it maintains the ecological balance
- (ii) It is essential to achieve sustainable development.

81. What is meant by solid waste? [BHALOTIA]

When the unwanted solid material is discarded in the environment by human beings it is called solid waste.

82. What are the sources of Municipal solid waste? [BHALOTIA]

The municipal solid wastes include the waste generated from domestic, industrial and commercial sources. Domestic waste includes kitchen waste, food waste, etc., commercial waste includes containers, plastic bags, etc. and industrial waste includes metal, paper, fibers etc.

83. Explain the 3 'R's in solid waste management. (Reduce, reuse & Recycle) [Very Imp] [90%]

3R strategy is an approach to reduce the amount of solid waste. 3R refers to Reduce, Reuse and Recycle. 'Reduce' means to avoid the use of those materials which increase the solid waste. 'Reuse' means repeated use of item without any side effects, and 'Recycle' means use of waste itself as a resource. According to this strategy, one should avoid the use of non-recyclable substances (such as polythene), which are harmful for environment and organisms.

84. Which types of material are present in Industrial waste? [BHALOTIA]

Industrial waste may contain heavy metals, oil, chemicals, paint residues, oil, ash, etc.

85. What are the household methods in solid waste management? [BHALOTIA]

- (a) Composting is a process whereby organic waste is biodegraded into a nutrient-rich, soil-like mixture. Bacteria and fungi are utilized to quickly and efficiently break down waste materials to produce compounds that are helpful to plants.
- (b) Vermicomposting, on the other hand, is the breakdown of organic material (food waste, animal waste) by the joint action of microorganisms and red worms to convert it into useful soil conditioner. It is a very easy method for fast decomposition.

86. Explain the scientific methods in municipal solid waste management. [BHALOTIA]

- (a) Secured landfill - It is the most suitable scientific method of solid waste management as it is meant for safe disposal of the solid waste, so that it cannot contaminate the environment. In this method, the waste material is buried in the soil at a particular site which is around 2-3 km away from the water bodies.
- (b) Pyrolysis - It is the chemical decomposition of the semi-combustible waste by heat in the absence of air. This process is beneficial for the production of electricity and gas. Pyrolysis is mainly used for the municipal solid waste management.

87. How is biomedical waste managed? [BHALOTIA]

Biomedical waste includes solid waste material such as syringes, needles, hand gloves, masks, bandages etc. generated from hospitals, dispensaries and clinics. This waste needs to be managed and disposed off with proper care and attention. The entire biomedical waste collected should be properly segregated and placed separately in different bins having different colours like green-coloured bin for recyclable waste and red-coloured for non-recyclable waste. These bins should be transferred to recycling waste treatment plants and other dumping sites for further treatment.

Long Qns of 5 Mark each for Last time revision:

1. What is meant by solid waste? Give an outline idea of the management of solid waste. [90%] [Very imp]****

Solid waste:

When the unwanted solid material is discarded in the environment by human beings it is called solid waste.

Sources of Solid Wastes

- (a) Solid domestic garbage.
- (b) Solid waste material from various industries.
- (c) Solid agricultural waste.
- (d) Plastics, glass, metals, e-waste, etc.
- (e) Medical waste.
- (f) Construction waste, sewage sludge

Methods of Solid Waste Management & Treatment of Solid Waste

There are various methods of solid waste management. The most recognized ones include:

- (a) **Solid Waste Collection:** Collection refers to the method in which solid wastes are collected for transportation to final disposal.
- (b) **Separation:** It is the manual sorting of solid waste before disposing it. For e.g. sorting out the dry solid waste from the wet solid wastes or sorting out between biodegradable wastes and non-biodegradable wastes.
- (c) **Sanitary Landfill:** This is the most common and popular way of carrying out the disposal of solid waste today. The trash that is collected by the municipal workers is transported to huge areas of land that are dug deep.
- (d) **Incineration:** In simple terms, this method is the burning of solid wastes at a very high temperature until the waste turns to ashes.
- (e) **Recycling:** Recycling is the conversion of discarded solid waste into new products. Recycling reduces solid waste and helps in recovering the material to make new products for reuse. Hence, the three Rs – Recycle, Reduce and Reuse.
- (f) **Composting:** Composting is a biological process in which biodegradable solid wastes are allowed to decompose in the presence of a microorganism like fungi & bacteria which turns this degradable waste into the organic matter.
- (g) **Pyrolysis:** Pyrolysis is a chemical decomposition process whereby solid wastes are subjected to heat up to 430 degrees Celsius at a specific pressure and in presence of oxygen. The waste gets converted to solid residue of ash, carbon and some liquid.

**2. What is Noise pollution? What are its effects. [5 Marks]
[Very Important] [80%]****[BHALOTIA]**

Noise pollution

The term "noise pollution" refers to unwanted or annoying sounds that happen around you. Machinery, amplified music, noisy vehicles, and other things can cause it.

If it's loud or long-lasting, noise pollution can damage your hearing. It may also lead to other health problems, including headaches, sleep loss, and even high blood pressure. And it can stress you out, make you less productive, and decrease your quality of life.

What Causes Noise Pollution?

Almost anything that makes sound can cause noise pollution. Common sources include:

- (a) Construction equipment
- (b) Lawn mowers and leaf blowers
- (c) Vacuum cleaners
- (d) Loud speakers or stereos
- (e) Trucks, buses, planes, or traffic
- (f) Heating and air conditioning units

Effects of noise pollution?

- (a) **Health Effects:** Noise pollution adversely affects the lives of millions of people. Studies have shown that there are direct links between noise and health. Problems related to noise include stress related illnesses, high blood pressure, speech interference, hearing loss, sleep disruption, and lost productivity.
- (b) **Memory and concentration:** Noise may affect people's ability to focus, which can lead to low performance over time. It is also bad for the memory, making it hard to study. Interestingly, our ears need more than 16 hours' rest to make up for two hours of exposure to 100 dB.
- (c) **Sleep and behavioural disorders:** Noise above 45 dB stops you from falling asleep or sleeping properly. Remember that according to the World Health Organization it should be no more than 30 dB. Loud noise can have latent effects on our behaviour, causing aggressive behaviour and irritability.
- (d) **Psychological:** Noise can cause attacks of stress, fatigue, depression, anxiety and hysteria in both humans and animals.
- (e) **Physical:** Respiratory agitation, racing pulse, high blood pressure, headaches and, in case of extremely loud, constant noise, gastritis, colitis and even heart attacks.

**3. Discuss the different alternative sources of energy.
[5 Marks] [Very Important] [90%]****[BHALOTIA]**

Alternative sources of energy can be defined as the use of sources of energy other than the traditional fossil fuels (such as oil, coal, and natural gas), which are shorter in supply and which are considered harmful to the environment. It includes all renewable and nuclear energy sources.

The most commonly used alternative sources of energy include the following:

- (a) **Wind Energy:** In this source of energy, the wind is used for producing electricity by making use of the kinetic energy created by air in motion.
- (b) **Solar Energy:** In this source of energy, the radiation from the Sun is used which is capable of producing heat, causing chemical reactions, and generating electricity.
- (c) **Geothermal Energy:** It is a source of energy that is taken from the Earth's core. It comes from the heat which is generated during the original formation of the planet.
- (d) **Bioenergy:** In this source of energy electricity and gas are generated from the organic matter known as biomass. Bioenergy is one of the resources available to help meet the demand for energy, it includes electricity, heat and transportation fuel.
- (e) **Hydroelectric Energy:** It is a source of energy that is obtained by falling water from high potential to low potential as potential is defined to flow down from a certain height. It is a form of energy that harnesses the power of water in motion—such as water flowing over a waterfall—to generate electricity.
- (f) **Hydrogen energy:** Hydrogen is an energy carrier that can be used to store, move, and deliver energy produced from other sources. Today, hydrogen fuel can be produced through several methods. The most common methods today are natural gas reforming (a thermal process), and electrolysis.
- (g) **Nuclear energy:** Nuclear energy is a form of energy released from the nucleus, the core of atoms, made up of protons and neutrons. This source of energy can be produced in two ways: fission – when nuclei of atoms split into several parts – or fusion – when nuclei fuse together.
- (h) **Tidal energy:** Tidal energy is a form of power produced by the natural rise and fall of tides caused by the gravitational interaction between Earth, the sun, and the moon. Tidal currents with sufficient energy for harvesting occur when water passes through a constriction, causing the water to move faster.

**4. What are the direct and indirect uses of Biodiversity?
[5 Marks] [Very Important] [90%]****[BHALOTIA]**

Bio-diversity:

Biodiversity, also called biological diversity, the variety of life found in a place on Earth or, often, the total variety of life on Earth. A common measure of this variety, called species richness, is the count of species in an area.

Direct Use Of Biodiversity

- (a) Plants are an immediate incentive to biodiversity since it is the central benefit of giving nourishment that can be collected and expended legitimately.
- (b) Fuel is an immediate incentive to biodiversity in light of the fact that for a significant stretch of time, woodlands have given wood which is utilized as fuel which is utilized for gas, warmth, cooking, and other mechanical procedures.
- (c) Drugs and Medicines are an immediate incentive to biodiversity in light of the fact that conventional clinical practices use plants or their concentrates legitimately, and the pharmaceutical industry is increasingly reliant on regular items.

Indirect Use Of Biodiversity

- (a) **Social Value:** These are values related to people's social life, customs, religion, and psycho-spiritual aspects. In our country, many plants are considered sacred and sacred, such as Tulasi (holy basil), papal, mango, lotus, bael, etc. The leaves, fruits, or flowers of these plants are used for worship.
- (b) **Ethical Value:** This is due to ethical issues such as "all living things must be preserved". It is based on the concept of "Live and let live". All biodiversity must be protected because biodiversity is precious for our human beings to survive. Ethical values mean that we may or may not use a species, but the very fact that species exists in nature gives us pleasure.
- (c) **Ecosystem Service Value:** Recently, the unused value associated with the self-maintenance of the ecosystem and various important ecosystem services has been recognized. This refers to the services provided by ecosystems such as preventing soil erosion, preventing flooding, maintaining soil fertility, nutrient cycling, nitrogen fixation, water cycle, serving as a carbon sink, absorbing pollutants, and reducing the threat of global warming.
- (d) **Aesthetic Value:** Biodiversity has great aesthetic value. None of us would like to visit a vast wasteland that is devoid of any sign of life. People all over the world invest a lot of time and money to visit wildlife where they can enjoy the aesthetic value of biodiversity, and this type of tourism is now known as ecotourism.

5. Discuss the Effects of Global Warming. [RKB] [90%]***

Following are the major effects of global warming:

- (a) **Rise in Temperature:** Global warming has led to an incredible increase in earth's temperature. Since 1880, the earth's temperature has increased by ~1 degrees. This has resulted in an increase in the melting of glaciers, which have led to an increase in the sea level. This could have devastating effects on coastal regions.
- (b) **Threats to the Ecosystem:** Global warming has affected the coral reefs that can lead to the loss of plant and animal lives. Increase in global temperatures has made the fragility of coral reefs even worse.
- (c) **Climate Change:** Global warming has led to a change in climatic conditions. There are droughts at some places and floods at some. This climatic imbalance is the result of global warming.
- (d) **Spread of Diseases:** Global warming leads to a change in the patterns of heat and humidity. This has led to the movement of mosquitoes that carry and spread diseases.
- (e) **High Mortality Rates:** Due to an increase in floods, tsunamis and other natural calamities, the average death toll usually increases. Also, such events can bring about the spread of diseases that can hamper human life.
- (f) **Loss of Natural Habitats:** A global shift in the climate leads to the loss of habitats of several plants and animals. In this case, the animals need to migrate from their natural habitat and many of them even become extinct. This is yet another major impact of global warming on biodiversity.

6. What are the Causes of Air Pollution? [90%]* [RKB]**

Following are the important causes of air pollution:

- (a) **Burning of Fossil Fuels:** The combustion of fossil fuels emits a large amount of Sulphur dioxide. Carbon monoxide released by incomplete combustion of fossil fuels also results in air pollution.
- (b) **Automobiles:** The gases emitted from vehicles such as jeeps, trucks, cars, buses, etc. pollute the environment. These are the major sources of greenhouse gases and also result in diseases among individuals.
- (c) **Agricultural Activities:** Ammonia is one of the most hazardous gases emitted during agricultural activities. The insecticides, pesticides and fertilisers emit harmful chemicals in the atmosphere and contaminate it.
- (d) **Factories and Industries:** Factories and industries are the main source of carbon monoxide, organic compounds, hydrocarbons and chemicals. These are released into the air, degrading its quality.
- (e) **Mining Activities:** In the mining process, the minerals below the earth are extracted using large pieces of equipment. The dust and chemicals released during the process not only pollute the air, but also deteriorate the health of the workers and people living in the nearby areas.
- (f) **Domestic Sources:** The household cleaning products and paints contain toxic chemicals that are released in the air. The smell from the newly painted walls is the smell of the chemicals present in the paints. It not only pollutes the air but also affects breathing.

Important Points for MCQs of 1 Marks each:

1. The word environment is derived from the French word “environ” meaning surroundings. Environment literally means Surrounding in which we are living. [BHALOTIA]
2. The study of environmental components is multidisciplinary in nature, since it includes all disciplines. (important)***** [BHALOTIA]
3. "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.". (important)***** [BHALOTIA]
4. The modern concept of sustainable development is derived mostly from the 1987 Brundtland Report. (important)*****
5. The United Nations created 17 world development goals called the Sustainable Development Goals (SDGs). (important)***** [BHALOTIA]
6. Ecology was first devised by Ernst Haeckel, a German Zoologist. (important)*****
7. A.G. Tansley in 1935 proposed the term “ecosystem”. (important)*****
8. The ecosystem includes 2 main components for a working ecosystem: [BHALOTIA]
 - (a) Biotic Component
 - (b) Abiotic Component
9. Abiotic components are non-living chemical and physical factors of an ecosystem. A few examples of abiotic components include sunlight, soil, air, moisture minerals and more.
10. Biotic components are living factors of an ecosystem. A few examples of biotic components include bacteria, animals, birds, fungi, plants, etc. [BHALOTIA]
11. The producers are the autotrophic elements—chiefly green plants. They use radiant energy of sun in photosynthetic process whereby carbon dioxide is assimilated and the light energy is converted into chemical energy.
12. Decomposers : break down dead matter and gain their nutrition, and the decomposed material returns back to the land, which will again be utilized by the producers to produce more food. Example: Fungi and bacteria. [BHALOTIA]
13. The ultimate source of energy (for most ecosystems) is the sun. (Important)***
14. Thus, the energy flow is unidirectional in nature. (Important)***
15. Lotic: Flowing water (examples: River, Sea)
16. Lentic: Still water (examples: pools, ponds, lakes)

17. Several interconnected food chains form a food web. [BHALOTIA]
18. A food chain refers to the order of events in an ecosystem, where one living organism eats another organism, and later that organism is consumed by another larger organism.
19. An ecotone is a zone of junction or a transition area between two biomes (diverse ecosystems).
20. Edge effect refers to the changes in population or community structures that occur at the boundary of two habitats (ecotone). [BHALOTIA]
21. A species' ecological niche can be defined as the range of resources and conditions allowing the species to maintain a viable population. [BHALOTIA]
22. Ecological Pyramid are the graphical representations of the number, energy, and biomass of the trophic level of an ecosystem. [BHALOTIA]
23. Renewable Resources: The resources which cannot be exhausted even after continuous utilisation are termed renewable resources. Examples of renewable resources are the sun, wind, and tidal energy. [Important]***
24. Non-renewable Resources: The resources which cannot be immediately replaced once they are depleted are called non-renewable resources. Examples of non-renewable resources include fossil fuels, such as coal, petroleum, natural gas and rare minerals, nuclear energy etc. [Important]****
25. Fossil fuel: Fossil fuels are made from decomposing plants and animals. These fuels are found in the Earth's crust and contain carbon and hydrogen, which can be burned for energy. Coal, oil, and natural gas are examples of fossil fuels. [Important]****
26. Land degradation: The deterioration or loss of the productive capacity of the soils for present and future is called Land degradation. [BHALOTIA]
27. Desertification is the degradation process by which a fertile land changes itself into a desert by losing its flora and fauna, this can be caused by drought, deforestation, climate change, human activities or improper agriculture. Desertification is a process of degradation of the land.
28. Deforestation is when humans remove or thin forests for lumber or to use the land where the trees stood for crops, grazing, extraction (mining, oil, or gas), or development as the population increases and people migrate.
29. Non-conventional sources are also known as renewable sources of energy. Examples of non-conventional sources of energy include solar energy, bioenergy, tidal energy and wind energy.

30. Conventional Sources of Energy are also known as non-renewable sources of energy and are available in limited quantity apart from hydro-electric power. Further, it is classified under commercial and non-commercial energy. Example: Coal, Petroleum, Electricity, Fire wood, Dried dung etc [BHALOTIA]
31. Green energy is energy that can be produced using a method, and from a source, that causes no harm to the natural environment.
32. Natural Resource Accounting is a process of estimating the value of natural resource depletion and environment degradation due to economic activities. [BHALOTIA]
33. Biodiversity, also called biological diversity, the variety of life found in a place on Earth or, often, the total variety of life on Earth. A common measure of this variety, called species richness, is the count of species in an area.
34. The Convention on Biological Diversity (CBD), which came into force in 1993, is the global policy framework for action to maintain biodiversity for future generations [BHALOTIA]
35. India has been divided into 10 Biogeographic zones
36. Four of the world's 36 biodiversity hotspots are located in India
37. A plant, animal or microorganism that is in immediate risk of biological extinction is called endangered species or threatened species.
38. The RED-data book contains a list of endangered species of plants and animals. [BHALOTIA]
39. In Situ Conservation refers to the preservation and protection of the species in their natural habitat. Different methods of In-situ conservation include biosphere reserves, national parks, wildlife sanctuaries, etc.
40. Ex Situ Conservation means conservation of life outside their natural habitat or place of occurrence. Such strategies include establishment of [BHALOTIA]
- (a) botanical gardens,
 - (b) zoos,
 - (c) culture and DNA banks.
41. There are at present 18 Biosphere Reserves in India. There are a total of 104 national parks in India.
42. Protected areas are those areas in which human occupation or at least the exploitation of the resources are limited.
43. Wildlife Sanctuaries are protected areas meant only for the conservation of wild animals.

44. Government of India has passed the Environment (Protection) Act, 1986 to protect and improve the quality of our environment (air, water and soil).
45. June 5th: World Environment Day. ***** [BHALOTIA]
46. The main layers of atmosphere from the surface of earth upwards are troposphere, stratosphere, mesosphere and thermosphere.
47. Stratosphere, which is the seat of ozone is above troposphere.
48. Secondary pollutants: Smog, acid rain, peroxy acetyl nitrate (PAN) etc.
49. Primary pollutants: carbon monoxide, Sulphur oxides, nitrogen oxides, hydrocarbons, suspended particulate matter (SPM), Respirable Suspended Particulate Matter (RSPM)
50. Fly ash is ejected mostly by thermal power plants as byproducts of coal burning operations. Fly ash is now being used for making bricks and as a land fill
51. Chlorofluorocarbons (CFCs) are used in refrigerators, air conditioners and aerosol sprays.
52. Sulfur dioxide is primarily produced for sulfuric acid manufacture. It contributes to acid rain
53. Air Quality Index (AQI) [BHALOTIA]
54. Water-borne diseases: Diarrhoea, typhoid, cholera, dysentery, jaundice, hepatitis, etc.
55. Sound is measured in a unit called the decibel (dB).
56. The permitted noise level is 125 decibels as per the Environment Protection Rules 1999.
57. Permissible limits of sound in decibels: Residential area: Maximum 55 dB; [BHALOTIA]
58. Climate change refers to long-term shifts in temperatures and weather patterns.
59. "Global warming is a gradual increase in the earth's temperature generally due to the greenhouse effect caused by increased levels of carbon dioxide, CFCs, and other pollutants."
60. The ozone layer is the layer present in the Stratosphere. [BHALOTIA]
61. Scientists have discovered a hole in the ozone layer over Antarctica. [BHALOTIA]
62. Acid rain results when sulfur dioxide (SO₂) and nitrogen oxides (NO_x) are emitted into the atmosphere.
63. Greenhouse gases include carbon dioxide, methane, nitrous oxides, and water vapor.

MOCK TEST PAPER: SET A

Fundamentals of Environment [Total Marks: 50]

Group A: 10 Qns of 1 Mark Each (10 Marks)

1. Which day is celebrated as World Environment day? [BHALOTIA]
(a) June 10th
(b) June 5th
(c) July 5th
(d) June 21st
2. What are the numbers of biodiversity hotspots in the world? [BHALOTIA]
(a) 32
(b) 36
(c) 10
(d) 4
3. The 3R principle is in which of the following order: [BHALOTIA]
(a) Reduce, Reuse, Recycle
(b) Reuse, Reduce, Recycle
(c) Recycle, Reuse, Reduce
(d) Rethink, Reuse, Recycle
4. Which of the following is a renewable source of energy? [BHALOTIA]
(a) Coal
(b) Uranium
(c) Wind
(d) All of the above
5. The ozone layer is present in [BHALOTIA]
(a) Mesosphere
(b) Thermosphere
(c) Stratosphere
(d) Troposphere
6. Which of the following is a fossil fuel? [BHALOTIA]
(a) Oil
(b) Coal
(c) Natural gas
(d) All of the above
7. Lotic Water means _____ [BHALOTIA]
(a) Lake water
(b) Running water in rivers
(c) Ocean water
(d) Still water in pond

8. Which one of the following is a secondary air pollutant? [BHALOTIA]
(a) PAN
(b) CO
(c) SO₂
(d) CO₂
9. Which of the following does not fall under 'in situ conservation'? [BHALOTIA]
(a) Seed bank
(b) National park
(c) Sanctuary
(d) None of the above
10. CBD stands for [BHALOTIA]
(a) Conference on Biodiversity
(b) Convention on Biodiversity
(c) Climate and Biodiversity
(d) None of the above

Group B: 10 Short Questions of 2 Marks Each (out of 12):

11. What is sustainable development? [Short Qn 3] [BHALOTIA]
12. What is Ecology? [Short Qn 6]
13. What is Ecosystem? [Short Qn 7] [BHALOTIA]
14. What is Food chain? [Short Qn 13]
15. What is Food web? [Short Qn 14]
16. What is Ecological succession? [Short Qn 20] [BHALOTIA]
17. What is Renewable & Non-Renewable Resources of energy? Give example. [Qn 21+ 22]
18. What is Land degradation? [Short Qn 24]
19. What is Desertification? [Short Qn 28]
20. What is Green Energy? [Short Qn 38] [BHALOTIA]
21. What is Biopiracy? [Short Qn 47]
22. What is Climate change? [Short Qn 59]

Group C: 4 Qns of 5 Marks Each (out of 6): 20 Marks

23. What is meant by solid waste? Give an outline idea of the management of solid waste [RKB]
24. What is Noise pollution? What are its effects.
25. Discuss the different alternative sources of energy. [BHALOTIA]
26. What are the direct and indirect uses of Biodiversity?
27. Discuss the Effects of Global Warming. [BHALOTIA]
28. What are the Causes of Air Pollution? [BHALOTIA]

Extra MCQs of 1 Mark each for Practice

1. Which two countries of the world constitute about 57% of the large dams? [BHALOTIA]
 - a. India and China
 - b. India and Brazil
 - c. China and Brazil
2. Which day is celebrated as World Environment day? ***** [BHALOTIA]
 - a. June 10th
 - b. June 5th
 - c. July 5th
3. What are the numbers of biodiversity hotspots in the world? ***** [BHALOTIA]
 - a. 32
 - b. 36
4. UNCED stands for: *****
 - a. United Nations Corporation on Environment and Development
 - b. United Nations Conference on Environment and Development
 - c. United Nations Corporation on Environment and Disasters
5. The 3R principle is in which of the following order: ***** [BHALOTIA]
 - a. Reduce, Reuse, Recycle
 - b. Reuse, Reduce, Recycle
 - c. Recycle, Reuse, Reduce,
6. Which of the following gas is present in the air in maximum amount? *****[BHALOTIA]
 - a. Nitrogen
 - b. Oxygen
 - c. Carbon dioxide
7. Which of the following is a renewable source of energy? ***** [BHALOTIA]
 - a. Coal
 - b. Uranium
 - c. Wind
8. The pollutants that decomposable and manageable in nature are termed as - *****
 - a. Renewable pollutants
 - b. Non-biodegradable pollutants
 - c. Biodegradable pollutants
9. The ozone layer is present in - *****
 - a. Mesosphere
 - b. Thermosphere
 - c. Stratosphere
10. In which year the "project tiger" is launched in India? *****[BHALOTIA]
 - a. 1973
 - b. 1983
 - c. 1990
11. CNG stands for - *****[BHALOTIA]
 - a. Compressed Natural gas

12. Sustainable development means *****[BHALOTIA]
a. meeting present needs without compromising on future needs
b. progress of human beings
c. balance between human needs and the ability of earth to provide the resources
13. A product of photosynthesis is *****
a. Carbon dioxide
b. Water
c. Oxygen
14. Primary source of energy in a food web is/are *****[BHALOTIA]
a. Green plants
b. Sun
c. Inorganic nutrients
15. The true end of any food chain is the *****[BHALOTIA]
a. Decomposer
b. Predator
c. Consumer
16. The second trophic level in a lake is [BHALOTIA]
a. Phytoplankton
b. Zooplanktons
c. Fishes
17. In a pyramid of numbers in grassland ecosystems, the largest population is that of
a. Herbivores
b. Third order consumer
c. Secondary consumer
18. Deserts, grasslands, forests and tundra regions are the examples of *****
a. Biomes
b. Biogeographically regions
c. Ecosystems
d. Biospheres
19. A herbivore is also known as a ***** [BHALOTIA]
a. Producer
b. First order consumer
c. Second order consumer.
d. Third order consumer
20. Which of the following is a fossil fuel? *****[BHALOTIA]
a. Oil
b. Coal
c. Natural gas
d. All of the above
21. Biogas contains mainly *****[BHALOTIA]
a. Methane
b. Propane
c. Butane
22. A resource that cannot be replaced in a reasonably short time is usually referred to as **
a. Renewable
b. Non-renewable
c. Natural

23. Which of these is not a fossil fuel? ***[BHALOTIA]**

- a. Coal
- b. Oil
- c. Natural gas
- d. Uranium**

24. Which is a list of renewable resources? ***[BHALOTIA]**

- a. Petroleum, geothermal, wind
- b. Biomass, geothermal, hydropower
- c. Natural gas, wind, biomass
- d. Hydropower, solar, wind energy**

25. Red data book contains data of *****

- a. All plant species
- b. All animal species
- c. Threatened species**

26. IUCN Headquarters is at

- a. Morges, Switzerland**
- b. Paris, France
- c. Vienna, Austria

27. BOD stands for ***[BHALOTIA]**

- a. Biotic oxidation demand
- b. Biological oxygen demand**
- c. Biological oxidation demand

28. A river with high BOD value means *****

- a. Highly polluted**
- b. Highly clean
- c. Highly productive

29. Which of the following is not a greenhouse gas? ***[BHALOTIA]**

- a. Methane
- b. Ozone**
- c. Water vapor
- d. Carbon dioxide

30. Study of trends in human population growth and prediction of future growth is called

- a. Demography**
- b. Psychology
- c. Biography

31. In which year Joint Forest Management was introduced? ***[BHALOTIA]**

- [A] 1970
- [B] 1971**
- [C] 1972
- [D] 1973

[Joint Forest Management (JFM) in India originated from West Bengal at the Arabari Research Range in West Midnapur District in 1971 as an experiment] *****

Environment studies for last time revision:

1. ENVIRONMENT RELATED IMPORTANT DATES: [BHALOTIA]

World Forest Day	21 March
Earth Day***	22nd April
World Biodiversity Day	22nd May
World Water Day	22nd March
World Environment Day*****	05 June
Van Mahotsav Day	1st week of July
World Health Day	7th April

2. ENVIRONMENT RELATED IMPORTANT BOOKS [BHALOTIA]

BOOKS NAME	AUTHORS
Silent spring****	Rachel Carson
Aranyak	Bibhutibhusan Bandopadhyay
Aranyer Adhikary	Mahasweta Devi
Violence of Green Revolution'	Vandana Siva
Rupashi Bangla'	Jibanananda Das

3. ENVIRONMENT RELATED INTERNATIONAL AGREEMENT [BHALOTIA]

Montreal Protocol****	The Montreal Protocol is a protocol to the Vienna Convention for the Protection of the Ozone Layer. It was agreed on 16 September 1987
Kyoto Protocol****	The Kyoto Protocol was adopted to reduce their emissions of greenhouse gases/Global warming. It was adopted in December 1997
Convention on Biological Diversity**	At the 1992 Rio Earth Summit, the Convention on Biological Diversity is dedicated to promoting sustainable development Conceived as a practical tool for translating the principles of Agenda 21.
Earth Summit**	The United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, took place in Rio de Janeiro, Brazil, from June 2-14, 1992. The central focus was on sustainable development.
Stockholm Conference (first international conference)**	In 1972 the United Nations convened the United Nations Conference on the Human Environment in Stockholm, Sweden. This conference, often called the Stockholm Conference, was the first international conference to address environmental problems directly.

4. ENVIRONMENT RELATED IMPORTANT TERMS [RKB]

Environment****	Surrounding
Lotic****	Flowing water (examples: River, Sea)
Lentic****	Still water (examples: pools, ponds, lakes)
Decibel****	Sound is measured in a unit called the decibel (dB).

5. ENVIRONMENT RELATED IMPORTANT ACRONYMS [RKB]

BOD*****	Biochemical Oxygen Demand [Related to Water pollution]
CFCs **	Chlorofluorocarbons
CITES **	Convention for International Trade in Endangered Species
CNG	Compressed Natural Gas
COD****	Chemical Oxygen Demand [Related to Water pollution]
EIA **	Environmental Impact Assessment
GHGs*	Green House Gases
GIS**	Geographic Information System
LPG	Liquefied Petroleum Gases
UNCED*	United Nations Conference on Environment and Development
SPM****	suspended particulate matter
RSPM***	Respirable Suspended Particulate Matter
MoEF	Ministry of Environment and Forests
AQI	Air Quality Index
PAN	peroxy acetyl nitrate [Secondary air pollutant]
MIC****	Methyl Isocyanate [Related to Bhopal Gas tragedy]
IUCN	International Union for the Conservation of Nature and Natural Resources.

9. ENVIRONMENT RELATED IMPORTANT DEFINITION

Environment****	Environmental Protection Act (1986) defined “Environment as the sum total of water, air and land, their interrelationship among themselves and with the human beings, other living beings and property.”
Sustainable development	Sustainable development meets the needs of the present without compromising the well-being of future generations.
Ecology*****	Ecology is the study of how living organisms interact with one another and with their physical environment.
Ecosystem	comprises living organisms (biotic) and their non-living (abiotic) environment

Bhalotia Classes (9883034569): ENVS 1sem 23-24 (for BA, BSC, B.com)

Biotic components***	include all living organisms present in the environmental system.
Abiotic component***	include non-living environment (soil, water, oxygen etc)
Producers*****	The producers are the autotrophic elements—chiefly green plants. Another word for producers is autotrophs.
Primary consumers:**	These are purely herbivorous animals that are dependent for their food on producers or green plants. Insects, rodents, rabbit, deer, cow, buffalo, goat are some of the common herbivores
Secondary consumers**	These are carnivores and omnivores. Carnivores are flesh eating animals and the omnivores are the animals that are adapted to consume herbivores. Examples of secondary consumers are sparrow, crow, fox, wolves, dogs, cats, snakes, etc.
Tertiary consumers**:	These are the top carnivores which prey upon other carnivores, omnivores and herbivores. Lions, tigers, hawk, vulture, etc. are considered as tertiary or top consumers.
Decomposers and transformers**	Decomposers and transformers are the living components of the ecosystem and they are fungi and bacteria (Nature's cleaners)
Food chain**	a chain of organisms, through which energy is transferred. A food chain starts with a producer such as plants. All organisms in a food chain, except the first organism, are consumers. Grass → grasshopper → bird → hawk
Food web**	a network of interconnected food chains. A food web comprises all the food chains in a single ecosystem.
Ecotone	An Ecotone is a transition area between two biomes. It is where two communities meet and integrate. It may be narrow or wide, and it may be local (the zone between a field and forest) or regional (the transition between forest and grassland ecosystems)
Edge effect	The edge effect is an ecological concept that describes how there is a greater diversity of life in the region where the edges two adjacent ecosystems overlap, such as land/water, or forest/grassland.
Ecological Niche:	In ecology, a niche is the match of a species to a specific environmental condition. It describes how an organism or population responds to the distribution of resources and competitors and how it in turn alters those same factors
Ecological succession	Ecological succession is the gradual process by which ecosystems change and develop over time. Nothing remains the same and habitats are constantly changing

Bhalotia Classes (9883034569): ENVS 1sem 23-24 (for BA, BSC, B.com)

Renewable resources****	Renewable resources can be easily renewed by nature. Air, water, wind, solar energy etc are all renewable resources
Non-renewable resources****	Those natural resources that are available in limited quantity. Therefore they are also known as exhaustible resources. Examples- coal, natural gas, petroleum, nuclear energy, etc.
Fossil fuel*****	Fossil fuels like non-renewable resources. They are found deep inside the earth. Example of fossil fuels is coal, petroleum, natural gas etc.
Desertification**	desertification is the process by which an area becomes desert-like. Causes: Overstocking, overcultivation, and deforestation Desertification is likely to be due to a combination of drought and mismanagement of land.
Deforestation**	Deforestation means cutting down the trees to a large extent be it forests, any barren land or trees we see on our way to school every day
Non-conventional sources of Energy**	Natural resources like wind, tides, solar, biomass, etc generate energy which is known as “Non-conventional resources“. These are pollution free & renewable source of energy.
Biodiversity*****	Biodiversity is the variability among Earth’s terrestrial, freshwater, and marine organisms, as well as the ecosystems of which they are part
Biodiversity hotspot ****	Biogeographic region with a significant reservoir of biodiversity that is under threat from humans.
In-situ conservation*****	on site conservation or the conservation of genetic resources in natural populations. Examples: National parks, Wildlife sanctuaries, Biosphere reserves
Ex-situ conservation*****	preservation of components of biological diversity outside their natural habitats. Examples: botanical gardens, zoos, seed Bank, and DNA banks.
Hazardous waste**	Hazardous waste is most often a by-product of a manufacturing process - material left after products are made. Some hazardous wastes come from our homes: Examples: solvents acid, heavy metals, pesticides, and chemicals
Global warming*****	Global warming, the phenomenon of increasing average air temperatures near the surface of Earth over the past one to two centuries
Richter scale ****	It measures seismic waves on a log table. The magnitude of earthquake of 1 Richter scale could be detected only by seismograph.

10. ENVIRONMENT RELATED IMPORTANT CONCEPTS:****

The study of environmental is multidisciplinary in nature, since it includes all disciplines****

The term sustainable development was coined by a commission headed by Brundtlands****

A.G. Tansley in 1935 proposed the term “ecosystem”.****

The producers are the autotrophic elements—chiefly green plants.***

The ultimate source of energy (for most ecosystems) is the sun****

Grasslands covers 40 % of the Earth's surface.****

Grasslands are found on every continent except Antarctica. ****

Today, one-third of the world's land surface is in the grip of deserts.***

Fresh water ecosystems are characterized as lotic (having flowing water) or lentic (still water).

The word ecology was coined by the German zoologist Ernst Haeckel**

The name of Rabindra Nath Tagore is connected with Vana-mahotsava

The energy flow in ecosystem is One – way***

Ramsar Convention refers to the conservation of Wetlands**

Causes of Land Degradation: (a) Deforestation (b) Overgrazing (c) Agricultural practices (d) Industrialization (e) Urbanization.**

Control Measures for Land Degradation: Crop Rotation, Strip farming, Contour Farming, Construction of Dams:

Causes of Soil Erosion, Wind, Water, Overgrazing, Deforestation

Water is the most abundant, inexhaustible renewable resource. It covers Approx 71% of the globe in the form of oceans, rivers, lakes, etc. Of this 71 %, only 3% is available as freshwater. From this 3%, roughly 2% is frozen in polar icecaps and only a fraction of the remaining 1% is used as drinking water*****

India has been divided into 10 Biogeographic zones**

Deccan Plateau is India's largest Biogeographic region making 42% of the total geographical area.**

Corals are mainly found in the Andaman and Nicobar Islands.**

Western Ghats, Eastern Himalayas & Indo-Burma Region, Sundaland are four hot spots of India.*****

Jim Corbett National Park is the First national park in India and was established in 1936 to protect the endangered Bengal tiger. It is located in Nainital district of Uttarakhand. ****

Gir Forest National Park is a wildlife sanctuary in Gujarat, western India. It was established to protect Asiatic lions, ****

Kaziranga National Park is a protected area of Assam. Spread across the floodplains of the Brahmaputra River. It is famous for rhinoceroses.****

The Sundarbans National Park is a National Park, Tiger Reserve, and a Biosphere Reserve in West Bengal. Sundarbans National Park is a large coastal mangrove forest, shared by India and Bangladesh*****

Bhalotia Classes (9883034569): ENVS 1sem 23-24 (for BA, BSC, B.com)

Acid rain corrodes the marble monuments like Taj Mahal. This phenomenon is called as “Marble cancer”. **

chlorofluorocarbons (CFCs) which are used in refrigerators, air conditioners damage the ozone layer of the atmosphere. ****

Major source of SPM (suspended particulate matter) are vehicles, power plants, construction activities, oil refinery, railway yard, market place, industries, etc. ****

Carbon monoxide (CO) is a colorless, odorless, tasteless and highly toxic gas that is slightly less dense than air. Automobiles biggest source of CO **

Ozone (O₃): It occurs naturally in the stratosphere **

Sulphur dioxide (SO₂): **

It is a toxic gas with a pungent, irritating smell.

It contributes to acid rain

Coal-burning power plants major source

Nitrogen Oxides (NO_x) **

Produced from burning of fossil fuels

Contributes to acid rain, smog

Automobile engine main source

Biological oxygen demand (BOD), Chemical oxygen demand (COD) are related to Water pollution. ****

DDT was one of the first chemicals in widespread use as a pesticide.

Sources of Marine Pollution: Dry docking; Tanker accidents; Deep sea mining

Volcanic eruptions in the sea.

Garbage: many broad categories of garbage are:

Organic waste: kitchen waste, vegetables, flowers, leaves, fruits.

Toxic waste: old medicines, paints, chemicals, bulbs, spray cans, fertilizer and pesticide containers, batteries, shoe polish.

Recyclable: paper, glass, metals, plastics.

Hospital waste: such as cloth with blood

The climate system is comprised of five interacting parts, the atmosphere (air), hydrosphere (water), cryosphere (ice and permafrost), biosphere (living things), and lithosphere (earth's crust and upper mantle).

Wetlands are areas that remain waterlogged for a substantial period of the year. ***

Smog: (smoke + fog) Fog heavily polluted by smoke is called Smog. ***

Aerosols: Solids or liquid matter dispersed into the atmosphere is called aerosols.

Water borne-diseases:

(a) From Bacteria — Cholera, typhoid

Layers of Atmosphere:*******Troposphere**

The troposphere starts at the Earth's surface and extends 8 to 14.5 kilometers high (5 to 9 miles). This part of the atmosphere is the most dense. Almost all weather is in this region.

Stratosphere

The stratosphere starts just above the troposphere and extends to 50 kilometers (31 miles) high. The ozone layer, which absorbs and scatters the solar ultraviolet radiation, is in this layer.

Mesosphere

The mesosphere starts just above the stratosphere and extends to 85 kilometers (53 miles) high. Meteors burn up in this layer

Thermosphere

The thermosphere starts just above the mesosphere and extends to 600 kilometers (372 miles) high.

Aurora and satellites occur in this layer.

SPM in air is measured by High Volume Sampler *****

Bharat Stage – VI is related to Automobile emission *****

The 'Arabari Model' in West Bengal is famous for Joint Forest Management

The Project tiger was launched in India in 1972

Green Peace is N.G.O

The biggest mangrove in India is Sunderbans

Hygrometer is an instrument used to record Relative humidity

The metal responsible for 'Itai-itai disease' is Cadmium

Azotobacter bacteria can fix nitrogen

Free floating aquatic microscopic organisms are known as Plankton

Lung is affected by silicosis

Disease caused by bacteria:*****

Diphtheria, Pneumonia, Cholera, Leprosy, Typhoid, Tuberculosis, Plague

Disease caused by virus:*****

Chicken Pox, Small Pox, AIDS, Yellow fever, Influenza, Dengue fever, Rabies

Disease caused by Protozoa*****

Malaria, , Sleeping sickness

Malaria is caused by Protozoa Plasmodium and it is transmitted by Female Anopheles Mosquito.

Dengue is caused by Dengue virus and it is transmitted by the bite of Female Mosquito Aedes

Sand fly' is responsible for Kala-azar

33 % percentage of its geographical area of a country should be under forest cover

Environmental studies: Question Paper: 2013 (Honours)

Multiple Choice Questions [25 x 2 = 50 Marks]

1. The scale that measures the magnitude of earthquake is- [BHALOTIA]
 - (a) Kelvin's scale
 - (b) Fahrenheit scale
 - (c) **Ritcher scale**
2. Bharat Stage-II is related to which of the following? [BHALOTIA]
 - (a) Solid waste management
 - (b) **Automobiles emission**
 - (c) Noise pollution.
3. The largest ozone hole lies in the sky above- [BHALOTIA]
 - (a) Africa
 - (b) Australia
 - (c) **Antarctica**
4. Much of the atmospheric air is present in the- [BHALOTIA]
 - (a) Stratosphere
 - (b) Mesosphere
 - (c) **Troposphere**
5. Major air pollutant for petrol car is – [BHALOTIA]
 - (a) SO₂
 - (b) **CO**
 - (c) CO₂
6. Pollen can cause- [BHALOTIA]
 - (a) Typhoid
 - (b) Tuberculosis
 - (c) **Allergy**
7. One of the non-conventional source of energy is- [BHALOTIA]
 - (a) Nuclear energy
 - (b) **Wind energy**
 - (c) Energy from fossils fuels.
8. The major atmosphere gas layer in stratosphere is- [BHALOTIA]
 - (a) Hydrogen
 - (b) Carbon di oxide
 - (c) **Ozone**
9. Which one of the following functions in West Bengal High Court to deal with environmental problems- [BHALOTIA]
 - (a) Pollution control Board
 - (b) **Green Bench**
 - (c) Yellow Bench
10. Ozone is beneficial because it-[BHALOTIA]
 - (a) Release Oxygen
 - (b) Maintain temperature of air
 - (c) **Protects from UV radiation**
11. The novel "Aranyer Adhikary" is written by- [BHALOTIA]
 - (a) Bibhutibhusan Bandopadhyay
 - (b) Sunil Gangopadhyay
 - (c) **Mahasweta Devi**
12. Dengue is transmitted by- [BHALOTIA]
 - (a) Female anopheles
 - (b) Female culex
 - (c) **Female Aedes**

13. Control of pest population by natural predators, parasites or pathogens is called- [BHALOTIA]
(a) Biological pest control
(b) Integrated pest management
(c) Chemical pest control
14. Salmonella sp. And Shigella sp. Are pathogens that transmit disease through-[BHALOTIA]
(a) Air
(b) Water
(c) Vector
15. Amoebiasis is caused by- [BHALOTIA]
(a) Bacteria
(b) Protozoa
(c) Virus
16. Chemical, physical or biological agents that cause birth defect are called- [BHALOTIA]
(a) Mutation
(b) Teratogen
(c) Transcription
17. Which of the following is not of natural occurrence in India- [BHALOTIA]
(a) Giraffe
(b) Red panda
(c) Rhinoceros
18. Sundarbans are abundant in having- [BHALOTIA]
(a) Xerophytes
(b) Nuclear energy
(c) Mangrove
19. Graphic description of the surface configurations of an area is known as- [BHALOTIA]
(a) Topography
(b) Toposil
(c) Tilling
20. Chernobyl pollution is associated with- [BHALOTIA]
(a) Water pollution
(b) Radioactive pollution
(c) Noise pollution
21. The flow of energy in an eco system is- [BHALOTIA]
(a) Uni-directional
(b) Bi-directional
(c) Tri-directional
22. Biogas is-[BHALOTIA]
(a) Only methane
(b) Mixture of methane and hydrogen gas
(c) Mixture of methane, carbon dioxide and other gases
23. In atmosphere main source of Oxygen is- [BHALOTIA]
(a) Excretion
(b) Respiration
(c) Photosynthesis
24. Orchid is one type of-[BHALOTIA]
(a) Derophyte
(b) Halophyte
(c) Epiphyte
25. Terrestrial part of earth is called-[BHALOTIA]
(a) Biosphere
(b) Lithosphere
(c) Stratosphere

Environmental studies

Question Paper: 2014 (Honours)

Multiple Choice Questions [25 x 2 = 50 Marks]

Mark to the right answer of all the following questions (Q. No. 1-25)

1. Free floating microscopic organisms are known as [BHALOTIA]
(a) Nekton (b) Plankton (c) Periphyton
2. Which of the following bacteria can fix nitrogen?
(a) Nitrococcus (b) Nitrobacter (c) Azotobacter
3. The silent Valley movement was organised by
(a) Medha Patekar (b) Sundar Lal Bahuguna (c) Kerala Sastra Sahitya Parishad
4. Which of the following is not a micronutrient?
(a) Boron (b) Carbon (c) Molybdenum
5. Which one of the following organs is affected by silicosis? [BHALOTIA]
(a) Heart (b) Lung (c) Brain
6. Which one of the following is related to acid rain?
(a) Carbon monoxide (b) Sulphur dioxide (c) Hydrocarbon vapour
7. SPM in air is measured by:
(a) High volume sampler (b) Hygrometer (c) Barometer
8. Lotic Water means
(a) Lake water (b) Running water in rivers (c) Ocean water
9. Metal pollutant emitted from motor vehicle is
(a) Mercury (b) Lead (c) Cadmium
10. The word 'Ramsar' is related to [BHALOTIA]
(a) Forest land (b) Wetland (c) Grassland
11. The percentage of Nitrogen present in the atmosphere is
(a) 72.08% (b) 75.08% (c) 78.08%
12. Which of the following is greenhouse gas?
(a) Nitrous oxide (b) Nitric oxide (c) Nitrogen dioxide
13. World Health Day is celebrated on [BHALOTIA]
(a) 13th May (b) 14th May (c) 7th April
14. Activated Sludge refers to
(a) Air purification process (b) Waste water treatment (c) Solid waste treatment
15. The metal responsible for 'Itai-itai disease' is
(a) Mercury (b) Arsenic (c) Cadmium
16. Out of the following, which disease is not caused by bacteria? [BHALOTIA]
(a) Chicken pox (b) Tuberculosis (c) Leprosy
17. Montreal Protocol was made in order to reduce
(a) Greenhouse gases (b) Ozone depleting chemicals (c) Suspended particulate matter
18. El Niño results in
(a) Cold oceanic wave (b) Hot oceanic wave (c) Tsunami
19. Jim Corbett National Park is situated in
(a) Uttar Pradesh (b) Uttarakhand (c) Madhya Pradesh
20. Management of pest population by natural predators, parasites and pathogens is called
(a) Biological pest control (b) Integrated pest management
(c) Chemical pest control
21. Confinement of species in a particular area is described as [BHALOTIA]
(a) Endemic (b) Epidemic (c) Exotic
22. Which of the following is not an organo chlorine compound?
(a) Aldrin (b) Hydrochloric acid (c) Hexachlorobenzene
23. Copenhagen summit (2009) involved discussion on
(a) CFC emission (b) NO₂ emission (c) Carbon emission

Environmental studies
Question Paper: 2014 (Pass)

Multiple Choice Questions [25 x 2 = 50 Marks]

Mark to the right answer of all the following questions (Q. No. 1-25)

1. Pollen can cause [BHALOTIA]
(i) Tuberculosis (ii) Allergy (iii) Typhoid
2. The cause of Minamata disease is
(i) Arsenic pollution (ii) Mercury pollution (iii) Chromium pollution
3. Genetic diversity is known as
(i) α – diversity (ii) β – diversity (iii) γ – diversity
4. COD is measured for
(i) water sample (ii) soil sample (iii) air sample
5. Trickling filter is used in
(i) Water treatment (ii) air treatment (iii) solid waste treatment
6. The book ‘Silent Spring’ was written by
(i) Rachel Carson (ii) Charles Darwin (iii) Adam Smith
7. Salim Ali is a famous [BHALOTIA]
(i) Herpetologist (ii) Entomologist (iii) Ornithologist
8. Western Ghat is a famous
(i) Biodiversity Hot spot (ii) Ramsar Site (iii) Wild ass conservation area
9. The book of poems – ‘Rupashi Bangla’ was written by –
(i) Jibanananda Das (ii) Satyendra Nath Dutta (iii) Kamini Roy
10. The Stratosphere is the region running between
(i) 10 – 50 Km region (ii) 0 – 15 Km region (iii) 50 – 85 Km region
11. Earth Day is celebrated on
(i) 5th June (ii) 22nd May (iii) 22nd April
12. The 3P's of environment is popularly known as [BHALOTIA]
(i) Price – Product – Profit
(ii) People, Profit and Planet
(iii) Population, Poverty and Pollution
13. COP – Summit on Climate change was held in 2013 at
(i) Cuncun (ii) Warsaw (iii) Bali
14. Vermicompost is produced with the help of [BHALOTIA]
(i) ants (ii) earthworms (iii) mosquitoes
15. ‘Daphnia’ is a
(i) Periphyton (ii) Nekton (iii) Plankton
16. ‘Giardiasis’ is caused by
(i) Bacteria (ii) Virus (iii) Protozoa
17. ‘RSPM’ is
(i) Respirable Sophisticate Particulate Matter [BHALOTIA]
(ii) Respirable Suspended Particulate Matter
(iii) Respirable Surrounding Particulate Matter
18. When the amount of pesticide is magnified from one trophic level to the other, known as
(i) Bioaccumulation (ii) Biotransformation (iii) Biomagnification
19. High volume sampler can measure
(i) the SPM level in air (ii) BOD level in water (iii) level of noise
20. “Locust” is
(i) An insect (ii) a bird (iii) a fish
21. Which one of the following is not a renewable energy?
(i) Fossil fuel (ii) Wind energy (iii) Solar energy

Question Paper: 2015 (Honours)

Mark to the right answer of all the following questions (Q. No. 1-25)

- Which one is not an ore of iron?
(a) Bauxite (b) Magnetite (c) Hematite
- The first layer of atmosphere above the earth surface is
(a) Stratosphere (b) Troposphere (c) Mesosphere
- Hygrometer is an instrument used to record
(a) Relative humidity (b) Wind direction (c) Ocean currents
- The gas which is used as fuel :
(a) Hydrogen (b) Oxygen (c) Nitrogen
- Example of an 'Omnivore' is
(a) Cockroach (b) Blue whale (c) Vulture
- The biggest mangrove in India is
(a) Andamans (b) Sunderbans (c) Pichavaram
- Ecotone is [BHALOTIA]
(a) Ecosystem (b) Biome (c) A zone between two Ecosystem
- Which one of the following sequence is correct in food chain?
(a) Grasses → Fox → Rabbit
(b) Phytoplankton → Zooplankton → Fish
(c) Grasses → Chameleon → Insect → Birds
- Green Peace is [BHALOTIA]
(a) Government policy (b) N.G.O (c) Administrative treaty
- Agenda 21 was an outcome of the conference at
(a) Rio De Janeiro (b) Stockholm (c) Vienna
- 'IUCN' stands for
(a) International Union for the Conservation of Nature and Natural Resources.
- Lion is conserved in which national park?
(a) Corbett (b) Gir (c) Kaziranga
- The age of earth is approximately [BHALOTIA]
(a) 4.6 billion years (b) 4.8 billion years (c) 4.2 billion years
- The intensity of earthquake is measured on
(a) Richter scale (b) Fujita scale (c) Dalton scale
- What are the main constituents of biogas?
(a) Nitrogen and butane (b) Ethane and butane (c) Methane and carbon dioxide
- Which of the following non – renewable energy resources is not a fossil fuel?
(a) Oil (b) Coal (c) Nuclear fuel
- Acid rain is due to [BHALOTIA]
(a) Production of SO₂ gas (b) SO₂ gas converted to H₂SO₄ (c) Production of CO₂
- Ozone hole is caused by the increase in the level of
(a) Water vapour (b) Chlorofluorocarbon (c) Carbon monoxide
- The main pollutant is vehicle emission is
(a) CO (b) CO₂ (c) SO₂
- Eutrophication in water body causes reduction of [BHALOTIA]
(a) Dissolved O₂ (b) Dissolved H₂ (c) Dissolved salt
- Who wrote the book 'Silent Spring'?
(a) Rachel Carson (b) E.P. Odum (c) Ernst Haeckel
- Sardar Sarovar Dam is built on
(a) Sabarmati river (b) Narmada river (c) Tapi river
- EIA is
(a) Environment Impact Assessment
- 'Project Tiger' is initiated in India in
(a) 1972 (b) 1942 (c) 1973

Environmental studies
Question Paper: 2015 (Pass)

1. The water body with very high nutrient content is known as [BHALOTIA]
(a) Mesotrophic (b) Oligotrophic (c) **Eutrophic**.
2. Earth Day is celebrated on
(a) 5th June (b) **22nd April** (c) 22nd May
3. The gas responsible for Bhopal gas disaster is
(a) DDT (b) **MIC** (c) CFC.
4. Lotic Water means [BHALOTIA]
(a) Lake water (b) **Running water in rivers** (c) Ocean water
5. The word ' Ramsar ' is related to the following
(a) Forestland (b) **Wetland** (c) Grassland
6. Chipko movement took place in
(a) Kumaon region (b) Himachal region (c) **Tehri – Garwal Region**
7. SPM in air is measured by
(a) **High Volume Sampler** (b) Hygrometer (c) Barometer
8. Out of the following which disease is not caused by bacteria? [BHALOTIA]
(a) **Chicken Fox** (b) Tuberculosis (c) Leprosy
9. The element responsible for ' itai – itai ' disease is
(a) Mercury (b) Arsenic (c) **Cadmium**
10. Which one of the following is not found in India?
(a) Lion (b) Leopard (c) **Cheetah**
11. " Sandfly " is responsible for the following disease
(a) Plague (b) Amoebic dysentery (c) **Kala – azar**
12. The energy flow in ecosystem is
(a) **One – way** (b) Two – way (c) Three – way
13. ' Sardar Sarovar ' Dam is situated in
(a) Madhya Pradesh (b) **Gujarat** (c) Rajasthan
14. Bharat Stage – II is related to the following [BHALOTIA]
(a) Solid Waste Management (b) **Automobile emission** (c) Noise pollution
15. The average temperature of the Earth is approximately
(a) 10°C ; (b) **15°C** ; (c) 20°C
16. The Unit of ionizing radiation is called
(a) ROM (b) **RAD** (c) CAD
17. The novel ' Aranyak ' is written by
(a) Rabindranath Tagore (b) **Bibhutibhusan Bandopadhyay** (c) Jibanananda Das
18. Which one is not a renewable energy source
(a) Solar energy (b) Wind energy (c) **Fossil Fuel**
19. The ' Arabari Model ' in West Bengal is famous for
(a) **Joint Forest Management** (b) Rain water harvesting (c) Solar power Plant
20. The Permissible limit of arsenic in water is [BHALOTIA]
(a) **0.05 mg/L** ; (b) 0.005 mg /L ; (c) 0.5 mg /L
21. BOD is used to test [BHALOTIA]
(a) Soil (b) **Water** (c) Air
22. Silent Valley is situated in
(a) Nagaland (b) **Kerala** (c) Himachal Pradesh
23. The Novel written by Rachel Carson is
(a) **The Silent Spring** (b) The Voyage of Bengal (c) The Old Man and the sea.
24. The Principal Source of flyash is
(a) Thermal Power Plant (b) **Brick Field** (c) Forest fire.

Environmental studies
Question Paper: 2016 (Honours)

1. Which of the following layers is having maximum Ozone concentration? [BHALOTIA]
(a) Troposphere (b) Stratosphere (c) Ionosphere
2. Lithosphere consists of
(a) Solid rocky materials (b) Soft Lava (c) Water
3. Which of the following is not a greenhouse gas?
(a) Carbon- di – Oxide (b) Sulphur di – oxide (c) Methane
4. Which parameter is measured by Barometer?
(a) Atmosphere pressure (b) Rainfall (c) Temperature
5. Name a top level consumer of food chain.
(a) Deer (b) Banyan tree (c) Tiger
6. Which of the following is a fossil fuel? [BHALOTIA]
(a) Wood (b) Biodiesel (c) Petrol
7. Mangrove vegetation is found in
(a) Estuary (b) Desert (c) Tundra region
8. Which international protocol was signed for regulating CFC emission?
(a) Kyoto protocol (b) Montreal protocol (c) Rio protocol
9. The term sustainable development was coined by a commission headed by
(a) Brundtlands (b) Al Gore (c) Paul Elrich
10. Who wrote the book 'Silent Spring'?
(a) Rachel Carson (b) Indra Gandhi (c) Garret Hardin
11. Which day of the year is celebrated as Earth Day?
(a) 22nd February (b) 23rd March (c) 22nd April
12. Who among the following is a noted ecofeminist?
(a) Vandana Shiva (b) Sunita Narayan (c) Jhumpa Lahiri
13. What is the full form of IPCC? [BHALOTIA]
(a) International Protection for Climate Change
(b) Inter Government Panel on Climate Change
(c) Indian panel on Climate Change
14. Which of the following National Park conserves Rhinoceros?
(a) Sundarban National Park
(b) Gir National Park
(c) Kaziranga National Park
15. Which one of the following gas is poisonous? [BHALOTIA]
(a) Carbon monoxide (b) Carbon di – oxide (c) Nitrogen
16. What happens if lack of vegetation cover leads to dry environmental condition?
(a) Tsunami (b) Desertification (c) Deforestation
17. How much water is available as freshwater resource of the Earth?
(a) Around 3% (b) Around 2% (c) <1%
18. Name a process that can conserve fresh water resource of the Earth?
(a) Rainwater Harvesting (b) Desalinization (c) Ground water extraction
19. Write full for of CITES.
(a) Convention on International Trade on Endangered Species
20. Which of the following is a supportive value of biodiversity?
(c) Helps in nutrient recycling in soil.
21. What is epicenter of earthquake?
(a) The point underground, where the earthquake originated
22. The name of the virus causing AIDS is
(c) Human Immunodeficiency Virus.

Environmental studies

Question Paper: 2017 (Honours)

Multiple Choice Questions [25 x 2 = 50 Marks]

Mark in the answer sheet to the right answer of all the following questions (1 to 25)

1. The water body with very high nutrient content is known as – [BHALOTIA]
(a) Mesotrophic (b) Oligotrophic (c) **Eutrophic**
2. The book written by Rachel Carson is –
(a) **Silent Spring** (b) The Voyage of Beagle (c) Inferno
3. The blue baby syndrome is caused by the contamination of water due to – [BHALOTIA]
(a) Phosphate (b) Arsenic (c) **Nitrate**
4. The most toxic air pollutant from petrol car is –
(a) CO₂ (b) SO₂ (c) **Hydrocarbon.**
5. Plants tolerant to desert condition are –
(a) Halophyte (b) **Xerophyte** (c) Hydrophyte.
6. The state bird of West Bengal is –
(a) Drongo (b) **King Fisher** (c) Pigeon.
7. Example the tropical Savana Biome is –
(a) Dooars (b) Grasslands of Australia (c) **Terai.**
8. Keoladeo National Park is located one of the following states – [BHALOTIA]
(a) Gujarat (b) **Rajasthan** (c) Maharashtra
9. Sardar Sarovar dam is situated in –
(a) Madhya Pradesh (b) **Gujarat** (c) Rajasthan.
10. World Water Day is celebrated on –
(a) 5th June (b) **22nd March** (c) 22nd April.
11. Example of Lentic water is – [BHALOTIA]
(a) Running water in river (b) **Lake water** (c) Ocean water.
12. Appiko movement took place in –
(a) Kumaon region (b) Himachal region (c) **Karnataka.**
13. SPM in air is measured by –
(a) **High Volume Sampler** (b) Hygrometer (c) Barometer
14. The element responsible for itai-itai disease is – [BHALOTIA]
(a) Mercury (b) Arsenic (c) **Cadmium.**
15. Which one of the following is not found in India?
(a) Lion (b) Leopard (c) **Cheetah.**
16. The energy flow in the food-chain is –
(a) **One-way** (b) Two-way (c) Three-way.
17. Intensity of solar radiation is measured by –
(a) Hygrometer (b) **Luxmeter** (c) Nephelometer.
18. Which one is a non-renewable energy source? [BHALOTIA]
(a) Solar energy (b) Wind energy (c) **Fossil fuel.**
19. The novel 'Aranyak' is written by –
(a) Rabindra Nath Tagore
(b) **Bibhuti Bhushan Bandopadhyay**
(c) Jibanananda Das
20. The 'Arabari Model' in West Bengal is famous for –
(a) **Join Forest Management**
(b) Solid Waste Management
(c) Mangrove Conservation Centre.
21. Malaria disease is –
(a) Water borne (b) **Vector borne** (c) Air borne.

Environmental studies
Question Paper: 2018 (Honours)

Mark in the answer sheet to the right answer of all the following questions (1 to 25)

1. Which of the following is not a biotic resource? [BHALOTIA]
 - a) Coal
 - b) Petroleum
 - c) **Atomic energy**
2. Cause of 'Narmada Bachao Andolan' is
 - a) Mining
 - b) **Construction of dam**
 - c) Deforestation
3. According to 'Indian Meteorological Department' 40 % less than normal rainfall can be termed as
 - a) Dry spell
 - b) Partially deficient year
 - c) **Largely deficient year**
4. Term 'Biodiversity' was first coined by [BHALOTIA]
 - a) Charles Darwin
 - b) **Walter Rosen**
 - c) E.P. Odum
5. Biodiversity conservation in botanical garden [BHALOTIA]
 - a) In situ conservation
 - b) **Ex situ conservation**
 - c) None of (a) or (b)
6. EMP stands for
 - a) Environmental monitoring part
 - b) **Environmental management plan**
 - c) Environmental mitigation processes
7. Which of the following is a bio gas? [BHALOTIA]
 - a) **Gobar gas**
 - b) LPG
 - c) CNG
8. Silviculture includes [BHALOTIA]
 - a) Bamboo cultivation
 - b) Silk cultivation
 - c) **Lac cultivation**
9. Lichen is a symbiotic association between [BHALOTIA]
 - a) A Fungus with bacteria
 - b) An alga with another alga
 - c) **A fungus and an algae**
10. The main cause of minamata disease is [BHALOTIA]
 - a) **Methyl mercury**
 - b) Ethyl mercury
 - c) Arsenic
11. Red panda is found in [BHALOTIA]
 - a) Pakistan
 - b) **Nepal**
 - c) Java
12. Which of the following is not a problem for 'better future'?
 - a) Promoting public transport
 - b) Promoting use of paper
 - c) **Utilization of solar power**

13. Which is the following is most sustainable development goal?
a) Promote universal education
b) Give importance to gender equality
c) **Take action combat climate change**
14. Main cause behind 'Tsunami' is
a) Tidal wave
b) Gravitation of moon
c) **Under sea earthquake**
15. ESP are employed to remove particulate pollutants of the size of
a) **5-20µm**
b) > 20-50 µm
c) >50 µm
16. Abyssal zone is
A. Where photosynthesis takes place
B. **Cold and dark zone at the bottom of ocean**
C. Less sunlight available
17. One orderly process of transition from one biotic community to another is called
a) Niche
b) Edge effect
c) **Ecological succession**
18. Nektons include [BHALOTIA]
a) Oyster and barnacles
b) **Fish and turtles**
c) Cyclopes and copepods
19. 'Jane godall' is related to
a) Whale conservation
b) **Chimpanzee conservation**
c) Tiger conservation
20. What ideal percentage of its geographical area of a country should be under forest cover?
a) 3%
b) **33%**
c) 3.3%
21. One of the secondary air pollutant is [BHALOTIA]
a) CO₂
b) NO_x
c) **PAN**
22. Agenda-21 was an outcome of the conference at [BHALOTIA]
a) **Rio de Jenerio**
b) Stockholm
c) Doha
23. Green peace is
a) Government Policy
b) **NGO**
c) Administrative treaty
24. Vermicompost is produced with the help of
a) Ants
b) Files
c) **Earthworms**
25. Clouds as indicator of bad weather are
a) Stratus
b) Cumulus
c) **Cumulonimbus**

Environmental studies
Question Paper: 2019 (Honours)

1. Which of the following is not a renewable resource? [BHALOTIA]
 - a) Hydroelectric power
 - b) **Petroleum**
 - c) Plantation
2. Which of the following leads to soil erosion?
 - a) Afforestation
 - b) Thermal power generation
 - c) **Over grazing**
3. Sustainable development should be –
 - a) Individual centric
 - b) Anthropocentric
 - c) **Ecocentric**
4. Which of the following plant types are characteristic floras of Sundarbans? [BHALOTIA]
 - a) **Xerophytes**
 - b) Mesophyte
 - c) Halophyte
5. Earth Day is celebrated on –
 - a) 5th June
 - b) **22nd April**
 - c) 22nd May
6. 'Loktak' lake is located at
 - a) Assam
 - b) Mizoram
 - c) **Manipur**
7. The 'Arabari Model' of West Bengal is famous for – [BHALOTIA]
 - a) **Joint Forest Management**
 - b) Rain – water Harvesting
 - c) Solar power plant
8. The origin of earth is best explained by
 - a) **Big-Bang theory**
 - b) Fragmentation theory
 - c) Compaction and condensation theory
9. The temperature in the surface of the Earth is a function of distance from the Sun, based on the surface temperature should have been – 15°C, however the actual average surface temperature of Earth is 15°C.
The 30°C warming of earth surface is caused by
 - a) Heating contributed other stars
 - b) **Green house warming**
 - c) Thermal reaction in the Earth's interior
10. Biosphere on the surface of the earth includes
 - a) Only oceans
 - b) Only continents
 - c) **A part of the atmosphere, hydrosphere and lithosphere representing existence of life**
11. Oceanic and atmospheric circulations are set in the surface of earth for
 - a) **Equilibrating the thermal anomaly on earth surface**
 - b) Convection current in the Earth's mantle
 - c) Continental drift

12. Noamundi mines are famous for [BHALOTIA]
a) Gold ore
b) **Iron ore**
c) Copper ore
13. The third generation resources for biofuel production is
a) Corn
b) Grass species
c) **Algae**
14. Which one of the following is a secondary air pollutant?
a) **PAN**
b) CO
c) SO₂
15. Cadmium pollution results in which of the following disease? [BHALOTIA]
a) **Itai-Itai**
b) Dyslexia
c) Minamata
16. Demography is the study of understanding
a) Human ecology
b) **Human pollution**
c) Biogeography
17. Which of the following is not the source of anthropogenic air pollution?
a) Thermal power plant
b) Forest fire
c) **Incineration**
18. Which of the following statement is not true regarding 'Organophosphorous insecticides'?
a) They are persistence organic compounds
b) Prevents Acetylcholinesterase enzyme to release
c) **DDT is an example of organophosphorous compound**
19. Which of the following does not fall under 'in situ conservation'? [BHALOTIA]
a) **Seed bank**
b) National park
c) Sanctuary
20. The free floating microscopic organisms are known as
a) Nekton
b) Benthos
c) **Plankton**
21. CBD stands for
a) Conference on Biodiversity
b) **Convention on Biodiversity**
c) Climate and Biodiversity
22. Keoladeo National Park is located in [BHALOTIA]
a) Assam
b) Gujarat
c) **Rajasthan**

Environmental studies

Question Paper: 2021 (2nd Semester Honours & Pass)

Multiple Choice Questions [25 x 2 = 50 Marks]

1. One of the reasons behind the depletion of groundwater table is [BHALOTIA]
(a) water and soil pollution.
(b) change in monsoon timing.
(c) increase in concretized land surface and consequent loss of water percolation.
(d) None of the above.
2. Who led the Green Revolution in India?
(a) Medha Patkar (b) M.S. Swaminathan
(c) Rajendra Singh (d) Ramchandra Guha.
3. Which of the following lands are suitable for setting up industries from the viewpoint of environment?
(a) Agricultural land (b) Wasteland
(c) Wetlands (d) Forest.
4. Which of the following relationship is correct?
(a) Stockholm Conference — 1972 (b) Ramsar Convention — 1992
(c) Rio Earth Summit — 1997 (d) Paris Convention — 2001.
5. Which of the following relationship is correct? [BHALOTIA]
(a) Johad — Soil conservation (b) Johad — Water conservation
(c) CNG — Water pollution (d) Bishnoi — Agriculture.
6. The disease caused by mercury poisoning is known as
(a) Itai-itai (b) Encephalitis
(c) Minamata (d) Asbestosis
7. Which of the following is a silent zone?
(a) Market area (b) Residential area
(c) Educational institutional area (d) Office area.
8. The ecosystem of flowing water is called [BHALOTIA]
(a) Lentic (b) Lotic
(c) Neritic (d) Limnetic.
9. Which of the following relationship is correct?
(a) GPP = NPP+R (b) NPP = GPP+R
(c) R = NPP+GPP (d) GPP = NPP.
10. How many biogeographical regions are there in India? [BHALOTIA]
(a) 9 (b) 10
(c) 11 (d) 12.
11. Sundarbans is a
(a) Biosphere reserve (b) Ramsar site
(c) National Park (d) All are correct.

12. The number of biodiversity hotspots in India — [BHALOTIA]
(a) 2 (b) 3
(c) 4 (d) 6.
13. Which of the following is an endangered species? [BHALOTIA]
(a) Kangaroo (b) Bat
(c) Royal Bengal Tiger (d) Frog
14. In which state of India the Asian Lions are found?
(a) West Bengal (b) Gujarat
(c) Maharashtra (d) Assam.
15. The main responsible gas for acid rain is
(a) Oxygen (b) Carbon dioxide
(c) Hydrogen sulfide (d) Sulfur dioxide.
16. Which of the following relationship is correct?
(a) Photochemical reaction — Volatile Organic Compound
(b) Carbon dioxide — Secondary pollutant
(c) CFC — Stone cancer of Tajmahal
(d) Suspended Particles — Global warming.
17. What does the unit decibel measure in case of noise pollution? [BHALOTIA]
(a) The wavelength of sound (b) Type of noise
(c) Spread of noise (d) Intensity of noise.
18. What are the main three 'R's of solid waste management?
(a) Rot – Remove – Rethink (b) Reduce – Reuse – Recycle
(c) Reduce – Recovery – Rediscovery (d) Refuse – Remove – Rot.
19. What is measured by BOD? [BHALOTIA]
(a) Water pollution (b) Air pollution
(c) Soil pollution (d) Noise pollution.
20. Which of the following diseases is caused by air pollution? [BHALOTIA]
(a) Arsenocosis (b) Blackfoot disease
(c) Silicosis (d) Polio.
21. In which section/s of the Constitution of India the protection of environment is included?
(a) 37A & 51A(g) (b) 48A & 51A(g)
(c) 47C & 65A (d) 41G & 89A
22. Which is the reason behind increase in life expectancy of the people of a country?
(a) If population is declining
(b) If disease related mortality and child mortality is reduced
(c) If it becomes well educated
(d) If natural disasters can be avoided.
23. What is the unit of measuring earthquake? [BHALOTIA]
(a) Percentage (b) Decibel
(c) Vibrogram (d) Richter scale.

Environmental studies

Question Paper: 2022 (2nd Semester Honours & Pass)

Multiple Choice Questions [25 x 2 = 50 Marks]

1. Which of the following element is responsible for ground water pollution in various states?
a) Chlorine
b) Fluorine
c) Bromine
2. The 3R principle is in which of the following order? [BHALOTIA]
a) Reduce, Reuse, Recycle
b) Reuse, Reduce, Recycle,
c) Recycle, Reuse, Reduce
3. The functional aspects of the ecosystem are
a) Energy cycle
b) Nutrient cycle
c) Both (a) and (b)
4. What is the estimated percentage of forest-land India should ideally have? [BHALOTIA]
a) 15%
b) 50%
c) 33%
5. An example of toxin that biologically magnify is? [BHALOTIA]
a) Carbon-dioxide
b) DDT
c) CFC
6. Smog does not contain [BHALOTIA]
a) O₃
b) NO_x
c) Chlorine
7. UNCED stands for
a) United Nations Corporation on Environment and Development
b) United Nations Conference on Environment and Development
c) United Nations Corporation on Environment and Disasters.
8. Which of the following is not a greenhouse gas?
a) Carbon-dioxide
b) Methane
c) Oxygen
9. The day time permissible limit of noise level in residential area is
a) 40dB
b) 50 dB
c) 55 dB
10. The most frequent naturally occurring disaster is [BHALOTIA]
a) Drought
b) Tsunami
c) Flood
11. Which two countries of the world have about 57% of the large dams? [BHALOTIA]
a) India and China
b) India and Brazil
c) India and Japan
12. The type of forests grown in the Himalayan mountain region is called [BHALOTIA]
a) Broad – leaved forests
b) Coniferous forests
c) Deciduous forests

13. Air pollutants are mainly classified as [BHALOTIA]
a) Point and non-point pollutant
b) Primary and secondary pollutants
c) Natural and anthropogenic pollutants
14. Integrated crop management is defined as a process to
a) Use of traditional methods for growing crops
b) Using alternative to inorganic fertilizer and pesticides
c) Both (a) and (b)
15. In which of the following state of India wild ass is found? [BHALOTIA]
a) West Bengal
b) Gujarat
c) Kerala
16. Which of the following gas affects human health by reducing blood's ability to carry oxygen?
a) CO₂
b) SO₂
c) CO
17. The number of bio-diversity hotspots in the world are [BHALOTIA]
a) 33
b) 34
c) 36
18. Which of the layers of atmosphere is responsible for absorbing UV light?
a) Troposphere
b) Mesosphere
c) Stratosphere.
19. Which of the following is not a measure of sustainable water management? [BHALOTIA]
a) Preventing leakage from dams and canals
b) Reducing the rate of surface run off water
c) Preventing loss of water from Municipal pipes.
20. Which types of chemical weathering is enhanced by acid rain? [BHALOTIA]
a) Hydrolysis
b) Reduction
c) Oxidation
21. What are the two forms of alcohol present in bio-fuels? [BHALOTIA]
(a) Ethanol and Methanol
(b) Ethanol and Propanol
(c) Methanol and propanol
22. Which of the following is correct?
a) Stockholm Conference 1973
b) Ramsar Convention 1976
c) Rio Earth Summit 1992
23. Catalytic converter is used to control [BHALOTIA]
a) Water pollution
b) Noise pollution
c) Air pollution.

ADMISSION GOING ON FOR B.com Crash

course:

PER SUBJECT: ₹ 750

ALL SUBJECTS: ₹ 2500

**SYLLABUS OF OLD BATCH HAS BEEN
COMPLETED. NOW RESTART CLASSES FROM
THE VERY BEGINNING. CONTACT 9883034569**

DAILY CLASSES TILL EXAMS:

FOR SUGGESTIONS/MOCK TEST/ALL UPDATES:

Join telegram: https://t.me/CU_bcom_1sem

Join telegram: <https://t.me/bhalotia>

Follow the BHALOTIA CLASSES channel on

WhatsApp:

**[https://whatsapp.com/channel/0029VaHYV0MF1YIM
1es6uU19](https://whatsapp.com/channel/0029VaHYV0MF1YIM1es6uU19)**

For All updates & Exam time free Marathon

Subscribe:

<https://www.youtube.com/@Bhalotiaclass>

**Contact office 9883034569/9330960172 for Details. (10 am to
7 pm)**